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Submitting Organization

CROMPTON & KNOWLES CORP

Contractor

Document Title

HEALTH AND SAFETY DATA FOR SIX PRIMARY AMINOANTHRAQUINONES SELECTED FOR REPORTING BY THE EPA WITH ATTACHMENTS AND COVER LETTER DATED 020188

Chemical Category

ACID BLUE 40 (6424-85-7)

P359755892

CROMPTON & KNOWLES CORPORATION
Dyes & Chemicals Division
P.O.Box 341
Reading, Pa. 19603

February 1, 1988

The DocumenT Processing Center (TS-790)
OTS (Room L-100)
US EPA
401 M Street, SW
Washington, D.C. 20460

Attn: TSCA 8(d)

Dear Sir:

The enclosed health and safety data is submitted by Crompton & Knowles Corporation, Dyes & Chemicals Division, in compliance with TSCA Section 8(d) for the six primary aminoanthraquinones recommended by the ITC and selected for reporting by EPA. The information submitted includes all of the health and safety data which is known to Crompton & Knowles.

If there are any questions relating to the information submitted, please contact me at 215-582-6651.

Sincerely,

Janice Warnquist

Janice Warnquist
Manager-Regulatory Affairs
Environmental Affairs Department

Enclosures

86-880000132

0005342B3P

Contains No CBI

040026

ACID BLUE 40

C.I. 62125

CAS 6424-85-7

MB Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

TEST FOR EYE IRRITATION IN RABBITS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 D

Test started : 5/20/80
Test ended : 6/03/80

Objective : To identify ocular irritation potential

MATERIALS

Sample label : #1207-00 Mix 1 TTS, Conc. 200% Alizarine Blue 2GA

Sample received : 5/05/80

Description : Purple Powder

ANIMALS

Supplier(s) : Ace Animals, Nicholas Helf

Sex : 6 Female

New Zealand White rabbits, approximately 8 weeks old when received, were equilibrated for at least one week in this laboratory. Twenty-four hours pretest, the cornea of each animal was examined with fluorescein and cobalt blue light. Six apparently healthy rabbits, free from evidence of ocular irritation or damage, were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each animal was identified by a uniquely numbered eartag.

The animals were housed 1/cage in suspended wire mesh cages. Any extraneous material which might produce eye irritation was excluded from the area. Fresh Purina rabbit chow and water were freely available. The animal room, reserved exclusively for rabbits on acute tests, was maintained at 20 - 21°C and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Treatment - The test material (0.1 ml or 0.1 g) was placed once into the conjunctival sac of one eye of each of six rabbits. The lids were held together briefly to insure adequate distribution of the test material. The untreated eye of each rabbit served as a control.

Observations - The general health of the rabbits was monitored during the observation period. The ocular reactions of the cornea, iris and conjunctiva were graded at 1 hour and at 1, 2, and 3 days after dosing. If any score was

Project #: MB 80-4646 D
Sample #: 1207-00

noted on Day 3, the eyes were read again on Day 7. If any score was noted on Day 7, the eyes were read again on Day 14. Fluorescein and cobalt blue light were used in scoring ocular reactions on Days 1 and 3 and on Days 7 and 14, if necessary. Ocular reactions were graded as described by Draize, J.H. et al., J. Pharm. Exp. Ther. 82:377-390, 1944. The scores were interpreted by the method of Kay, J.H. Calandra, J.C. J. Soc. Cos. Chem., 13:281-289, 1962.

RESULTS

MEAN SCORES:

HOUR	DAYS				
1	1	2	3	7	14
16.33	39.7	33.33	32.66	7.66	2.66

CONCLUSION

The test article is moderately irritating.

SUMMARY OF DATA

Corneal opacity was present in 4/6 eyes. In one animal, it persisted to Day 14.

Iritis, noted in all eyes, was cleared by Day 7.

Mild to moderate conjunctival irritation, noted in all animals, was generally clear by Day 14.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the study, raw data and final report on the following dates;

June 3, 1980
June 4, 1980
June 25, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 6/29/80
Oscar M. Moreno, Ph.D.
Susan E. Weatherby 27 June 80
Susan E. Weatherby, Study Director
Elizabeth J. Altenbach 7-1-80
Elizabeth J. Altenbach, Archivist
Submitted: 7/01/80

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

TEST FOR EYE IRRITATION IN RABBITS

Project #: MB 80-4646 D

Sample #: 1207-00

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
5877	A	Cornea	Opacity	0[c]	4[c]	3	3	2	2
	B		Area	0	4	4	4	1	1
		1. Cornea Total = (AxB) x 5		0	80	60	60	10	10
	C	Iris		0	?	1	1	0	0
		2. Iris Total = C x 5		0		5	5	0	0
	D	Conjunctiva	Redness	2[a]	1[ad]	1	1	1	1
	E		Chemosis	2[b]	2[b]	2[b]	2[b]	2[b]	1[b]
	F		Discharge	2[b]	3[b]	2[b]	2[b]	1[b]	1[b]
		3. Conjunctiva Total = (D+E+F) x 2		12	12	10	10	8	6
		Totals added = 1 + 2 + 3		12	92	75	75	18	16
		UV Fluorescein scan			3		3	1	1
5878	A	Cornea	Opacity	0[c]	0	0	0	0	0
	B		Area	0	0	0	0	0	0
		1. Cornea Total = (AxB) x 5		0	0	0	0	0	0
	C	Iris		1	0	0	0	0	0
		2. Iris Total = C x 5		5	0	0	0	0	0
	D	Conjunctiva	Redness	2[a]	1	1	1	1	0
	E		Chemosis	2[b]	2[b]	1[b]	1[b]	0[b]	0[b]
	F		Discharge	2[b]	2[b]	2[b]	1[b]	0[b]	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		12	10	8	6	2	0
		Totals added = 1 + 2 + 3		17	10	8	6	2	0
		UV fluorescein scan			2		2	0	0
5887	A	Cornea	Opacity	0	0	2	2	0	0
	B		Area	0	0	1	1	0	0
		1. Cornea Total = (AxB) x 5		0	0	10	10	0	0
	C	Iris		0	1	1	1	0	0
		2. Iris Total = C x 5		0	5	5	5	0	0
	D	Conjunctiva	Redness	2[a]	2	2	2	1	0
	E		Chemosis	3[b]	2[b]	2[b]	2[b]	0	0[b]
	F		Discharge	3[b]	2[b]	2[b]	2[b]	1	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		16	12	12	12	4	0
		Totals added = 1 + 2 + 3		16	17	27	27	4	0
		UV fluorescein scan			3		2	0	0

a = conjunctiva stained purple by material
b = area at eye stained purple by material
c = cornea stained purple by material
d = material in eye

? = unable to determine

TEST FOR EYE IRRITATION IN RABBITS

Project #: MB 80-4646 D

Sample #: 1207-00

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
5888	A	Cornea	Opacity	0[c]	0	0	0	0	0
	B		Area	0	0	0	0	0	0
		1. Cornea Total = (AxB) x 5		0	0	0	0	0	0
	C	Iris		1	1	0	0	0	0
		2. Iris Total = C x 5		5	5	0	0	0	0
	D	Conjunctiva	Redness	2[a]	2	2	2	1	0
	E		Chemosis	3[b]	3[b]	2[b]	1[b]	0[b]	0[b]
	F		Discharge	2[b]	3[b]	1[b]	1[b]	0[b]	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		14	16	10	8	2	0
	Totals added = 1 + 2 + 3			19	21	10	8	2	0
	UV Fluorescein scan				2		1	0	0
5881	A	Cornea	Opacity	0	3[c]	4	4	2	0
	B		Area	0	2	1	1	1	0
		1. Cornea Total = (AxB) x 5		0	30	20	20	10	0
	C	Iris		1	1	1	1	0	0
		2. Iris Total = C x 5		5	5	5	5	0	0
	D	Conjunctiva	Redness	2[a]	2[ad]	1	1	1	0
	E		Chemosis	2[b]	3[b]	2[b]	2[b]	0[b]	0[b]
	F		Discharge	2[b]	3[b]	2[b]	2[b]	1[b]	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		12	16	10	10	4	0
	Totals added = 1 + 2 + 3			17	51	35	35	14	0
	UV fluorescein scan				2		2	1	0
5883	A	Cornea	Opacity	0[c]	2	3	3	0	0
	B		Area	0	3	2	2	0	0
		1. Cornea Total = (AxB) x 5		0	30	30	30	0	0
	C	Iris		1	1	1	1	0	0
		2. Iris Total = C x 5		5	5	5	5	0	0
	D	Conjunctiva	Redness	2[a]	2[a]	2	2	1	0
	E		Chemosis	2[b]	2[b]	2[b]	2[b]	1[b]	0[b]
	F		Discharge	2[b]	2[b]	1[b]	1[b]	1[b]	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		12	12	10	10	6	0
	Totals added = 1 + 2 + 3			17	47	45	45	6	0
	UV fluorescein scan				4		3	0	0

a = conjunctiva stained purple by material
b = area at eye stained purple by material
c = cornea stained purple by material
d = material in eye

SCALE OF SCORES FOR GRADING THE SEVERITY OF OCULAR LESIONS*

OCULAR TISSUE	DESCRIPTION	GRADING
CORNEA	A. OPACITY - Degree of Density - Area which is most dense is read	
	Scattered or diffuse area, details of iris clearly visible	1
	Easily descernible translucent areas, details of iris slightly obscured	2
	Opalescent areas, no details of iris visible, size of pupil barely discernible	3
	Opaque, iris invisible	4
	B. AREA OF CORNEA INVOLVED	
	One quarter or less but not zero	1
	Greater than one quarter but less than one half	2
	Greater than one half but less than three quarters	3
	Greater than three quarters, up to whole area	4
	SCORE: A x B x 5 Total Maximum = 80	
IRIS	A. VALUES	
	Folds above normal, congestion, swelling, circumcorneal injection (any or all or these or a combination of any thereof), iris still reacting to light (sluggish reaction is positive)	1
	No reaction to light, hemorrhage, gross destruction (any or all of these)	2
	SCORE: A x 5 Total Maximum = 10	
CONJUNCTIVA	A. REDNESS (refers to palpebral conjunctiva only excluding cornea and iris)	
	Vessels definitely injected above normal	1
	More diffuse, deeper crimson red, individual vessels not easily discernible	2
	Diffuse beefy red	3
	B. CHEMOSIS	
	Any swelling above normal (includes nictitating membrane)	1
	Obvious swelling with partial eversion of the lids	2
	Swelling with lids about half-closed	3
	Swelling with lids about half-closed to completely closed	4
	C. DISCHARGE	
	Any amount different from normal (does not include small amount observed in inner canthus of normal animals)	1
	Discharge with moistening of the lids and hairs just adjacent to the lids	2
	Discharge with moistening of the lids and hairs and considerable area around eye	3
	SCORE: (A + B + C) x 2 Total Maximum = 20	

*Draize, John H. Dermal Toxicity, "Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics". ASSOCIATION OF FOOD AND DRUG OFFICIALS OF THE U.S., 1959, pp 49-51

RATING OF TEST MATERIALS BASED ON EYE IRRITATION PROPERTIES*

RATING	RANGE	DEFINITION
Non-irritating	0 - 0.5	To maintain this rating all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Practically Non-irritating	Greater than 0.5 - 2.5	To maintain this rating, all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Minimally Irritating	Greater than 2.5 - 15.0	To maintain this rating, all scores at the 72 hour reading must be zero; otherwise, increase rating 1 level.
Mildly Irritating	Greater than 15.0 - 25.0	To maintain this rating, all scores at the 7 day reading must be zero; otherwise, increase rating 1 level.
Moderately Irritating	Greater than 25.0 - 50.0	To maintain this rating, scores at 7 days must be less than or equal to 10 for 60% or more of the animals. Also, mean 7 day score must be less than or equal to 20. If 7 day mean score is less than or equal to 20 but less than 60% of the animals show scores less than 10, then no animal among those showing scores greater than 10 can exceed a score of 30 if rating is to be maintained; otherwise, increase rating 1 level.
Severely Irritating	Greater than 50.0 - 80.0	To maintain this rating, scores at 7 days must be less than or equal to 30 for 60% or more of the animals. Also, mean 7 day scores must be less than or equal to 40. If 7 day mean score is less than or equal to 40 but less than 60% of the animals show scores less than or equal to 30, then no animal among those showing scores greater than 30 can exceed a score of 60 if rating is to be maintained; otherwise, increase rating 1 level.
Extremely Irritating	Greater than 80.0 -110.0	

*Kay, J.H., Calandra, J.C., J. Soc. Cos. Chem., 13:281 - 289, 1962.

SCALE OF SCORES FOR ULTRAVIOLET FLUORESCEIN SCAN

Reading	Grade
Negative	0
Positive with an area one quarter or less	1
Positive with an area greater than one quarter but less than one half	2
Positive with an area greater than one half but less than three quarters	3
Positive with an area greater than three quarters, up to whole area	4

ACID BLUE 40

C.I. 62125

CAS 6424-85-7

MB Research Laboratories, Inc.

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post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

TEST FOR PRIMARY DERMAL IRRITATION IN RABBITS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 C

Test started : 5/20/80
Test ended : 5/23/80

Objective : To identify dermal irritation potential as defined in 16 CFR 1500.3

MATERIALS

Sample label : #1207-00 Mix #1 TTS, Conc.200% Alizarine Blue 2GA

Sample received : 5/05/80

Description : Purple Powder - used as 50% m/v mixture in distilled water

ANIMALS

Supplier(s) : Ace Animals, Perfection Breeders

Sex : 6 Males

New Zealand White rabbits, approximately 8 weeks old when received, were equilibrated for at least one week in this laboratory. Six apparently healthy rabbits were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each animal was identified by a uniquely numbered metal eartag.

The animals were housed 1/cage in suspended wire mesh cages. Fresh Purina rabbit chow and water were freely available. The animal room, reserved exclusively for rabbits on acute tests, was maintained at 20 - 21°C and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Site Preparation - The fur was clipped from the back and sides of the animals. The back to the left of the spinal column of all animals was abraded. The abrasions, extending the length of the exposure site, scratched the stratum corneum but did not reach the derma or produce bleeding. The back to the right of the spinal column remained intact.

Treatment - Six rabbits were dosed once dermally at one abraded and one intact site/animal. 0.5 g (if the material was solid) or 0.5 ml (if the material was liquid) was applied to each site beneath 2.5 cm square gauze patches. The patches were secured with adhesive tape and the trunks were wrapped with impervious material. The test material was kept in contact with the skin for 24 hours, at which time the wrappings were removed.

Observations and Calculations - Dermal reactions were scored at 24 and 72 hours by the Draize scoring system (attached). The primary irritation index was calculated as cited in 16 CFR 1500.41.

Project #: MB 80-4646 C
Sample #: 1207-00

RESULTS

PRIMARY DERMAL INDEX: 0.17

CONCLUSION

The test material is minimally irritating.

SUMMARY OF DATA

Slight edema was noted in 3/6 animals at 24 hours.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the raw data and final report on the following dates;

May 27, 1980
June 25, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 6/27/80
Oscar M. Moreno, Ph.D.
Susan E. Weatherby 27 June 80
Susan E. Weatherby, Study Director
Elizabeth J. Altenbach
Elizabeth J. Altenbach, Archivist
Submitted: 7/01/80

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

INDIVIDUAL SCORES

	RABBIT EARTAG NUMBER						Mea Scc
	5546	5635	5636	5893	5576	5673	
Erythema & Eschar Formation							
Intact skin - 24 hours	0	0	0	0	0	0	0
Intact skin - 72 hours	0	0	0	0	0	0	0
Abraded skin - 24 hours	0	0	0	0	0	0	0
Abraded skin - 72 hours	0	0	0	0	0	0	0
Edema							
Intact skin - 24 hours	0	1	0	0	0	0	0
Intact skin - 72 hours	0	0	0	0	0	0	0
Abraded skin - 24 hours	0	1	0	1	1	0	0
Abraded skin - 72 hours	0	0	0	0	0	0	0

Sum of Mean Scores = 0

Primary Dermal Index = Sum of Mean Scores/4 0

Evaluation of Skin Reactions	Value
Erythema & Eschar Formation:	
No erythema	0
Very slight erythema (barely perceptible)	1
Well defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4
Edema Formation:	
No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well defined by definite raising)	2
Moderate edema (raised approximately 1 millimeter)	3
Severe edema (raised more than 1 millimeter and extending beyond the area of exposure)	4

The mean values (6 rabbits) for erythema/eschar and edema formation on intact and abraded skin at 24 and 72 hours (a total of 8 values) are added and divided by 4 to give the Primary Irritation score.

The conclusion was derived from the Primary Irritation Index as interpreted by the following table:

PRIMARY IRRITATION INDEX	CONCLUSION
0	Non-Irritating
0.1 - 0.5	Minimally Irritating
0.6 - 1.5	Slightly Irritating
1.6 - 3.0	Mildly Irritating
3.1 - 5.0	Moderately Irritating
5.1 - 6.5	Severely Irritating
6.6 - 8.0	Extremely Irritating

ACID BLUE 40

C.I. 62125

CAS 6424-85-7

M B Research Laboratories, Inc.

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215-536-4110

TEST FOR ACUTE DERMAL TOXICITY IN RABBITS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 B

Test started : 5/22/80
Test ended : 6/06/80

Objective : To determine dermal toxicity

MATERIALS

Sample label : #1207-00 Mix 1TTS, Conc. 200% Alizarine Blue 2GA

Sample received: 5/05/80

Description : Purple Powder - used as 50% m/v mixture in distilled water

ANIMALS

Supplier(s) : Perfection Breeders

Weight range : 2.0 - 2.5 kg
Sex : 2 Male - 2 Femal

New Zealand White rabbits, at least 8 weeks old when received, were equilibrated for at least one week in this laboratory. Two male and two female apparently healthy rabbits, were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each animal was identified with a uniquely numbered metal eartag.

The animals were housed 1/cage in suspended wire mesh cages (30" x 18" x 18"). Fresh Purina rabbit chow and water were freely available. The animal room, reserved exclusively for rabbits on acute tests, was maintained at 20 - 21°C and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Site Preparation - 24 hours prior to dosing, the fur was clipped from the backs of the animals. The clipped area was 200 square cm, approximately 10% of the body surface. Just prior to dosing, abrasions were made in one half of the rabbits. The abrasions, extending the length of the exposure site, scratched the stratum corneum but did not reach the derma or produce bleeding.

Treatment - Two male and two female rabbits were dosed at 2.0 g/kg. For liquid materials the dose was based on the sample weight as calculated from the specific gravity. The test material was applied once dermally to the prepared site under gauze patches. The patches were secured with adhesive tape and the trunks were wrapped with impervious material. The test material was kept in contact with the skin for 24 hours, at which time the wrappings were removed. An estimate of the amount of material remaining was recorded. The exposure site was washed with warm tap water to remove excess material.

Observations - Dermal reactions were scored at 25 hours, 7 and 14 days by the

Project #: MB 80-0646 P
Sample #: 1207-00

Draize scoring system (attached). The rabbits were observed daily for 14 days for signs of toxicity, pharmacological effects and mortality. Body weights were recorded pretest and in the survivors at 7 and 14 days.

Termination - At 14 days, the survivors were sacrificed. All animals were examined for gross pathology.

RESULTS

LD 50: Greater than 2.0 g/kg of body weight

MORTALITY : 1/2 Male, Animal #5901 Day 2, 0/2 Female

INDIVIDUAL BODY WEIGHTS AND SKIN GRADES:

EARTAG #	DOSE VOLUME cc	WEIGHTS - kg 0	7	14	% REM.	Redness 25h	7	14	Edema 25h	7	14
5901-M	8.0	2.0			90	0			0		
5903-M	10.0	2.5	2.6	3.0	90	1	1	0	0	0	0
5924-F	8.4	2.1	2.1	2.1	90	1	1	0	0	0	0
5928-F	9.2	2.3	2.5	2.5	90	0	1	1	0	0	0

ab = abraded
% Rem. = the amount of material remaining on the skin, gauze and occlusive binding at 24 hours, after the occlusive binding was removed.

Evaluation of Skin Reactions

Erythema & Eschar Formation:

No erythema	0
Very slight erythema (barely perceptible)	1
Well defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4

Edema Formation:

No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well defined by definite raising)	2
Moderate edema (raised approximately 1 millimeter)	3
Severe edema (raised more than 1 millimeter and extending beyond the area of exposure)	4

TEST FOR ACUTE DERMAL TOXICITY IN RABBITS

Project #: MB 80-0646 B

Sample #: 1207-00

TOXIC SIGNS

@ 2.0 g/kg		HOUR	DAY													
An.# & Sex		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
5901	M		D	Z												
5903	M															
5924	F								X	W	DW	D	DW	DW	DVW	DVW
5928	F										X					

AT ALL TIMES NOT MENTIONED, ANIMALS APPEARED NORMAL

D = diarrhea
V = abdomen bloated
W = emaciation
X = few feces
Z = dead

NECROPSY OBSERVATIONS:	5901 F	5903 S	5924 S	5928 S
Normal		X	X	
Lung(s): congestion	1			
Body wasted	1			
Treated skin scaly				1

D = dead
S = sacrificed
1 = scattered or slight

Project #: MB 80-4646
Sample #: 1207-00

CONCLUSION

The test article is not toxic, as defined in 16 CFR 1500.3.

SUMMARY OF DATA

One male animal died from a dermal dose of Alizarine Blue 2GA at 2.0 g/kg on Day 2.

Diarrhea was the only predeath toxic sign. The surviving animals were generally normal

Slight erythema was noted throughout the study. Edema was not present.

Body weights and necropsy findings of survivors were generally normal. Congested lungs and wasting of the body were noted in the spontaneous death.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the study, raw data and final report on the following dates;

May 23, 1980
June 9, 1980
June 24, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 7/29/80
Oscar M. Moreno, Ph.D.
Daniel R. Cerven 2 Jul 80
Daniel R. Cerven, Study Director
Elizabeth A. Altenbach 7-1-80
Elizabeth A. Altenbach, Archivist
Submitted: 7/01/80

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

12A/A

ACID BLUE 40

C.I. 62125

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TEST FOR SINGLE DOSE/ORAL LD 50 IN RATS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 A

Test started : 5/19/80
Test ended : 6/02/80

Objective : To determine oral toxicity and/or oral LD 50

MATERIALS

Sample label : #1207-00 Mix #1TTS, Conc. 200% Alizarine Blue 2GA

Sample received : 5/05/80

Description : Purple Powder - used as 30% m/v mixture in distilled water

ANIMALS

Supplier(s) : Ace Animals

Weight range : 186 - 230 g
Sex : 5 Male - 5 Fem

Wistar rats, approximately 8 weeks old when received, were equilibrated for at least one week in this laboratory. Apparently healthy rats were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each rat was identified with an indelible body mark.

The animals were housed 5/cage in suspended wire mesh cages. Fresh Purina rat chow and water were freely available except for 16-20 hours prior to dosing when food was removed. The animal room, reserved exclusively for rodents on acute tests, was temperature controlled and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Treatment - The test material was given orally by syringe and a dosing needle. One group of 5 male and 5 female rats was initially dosed at 5.0 g/kg. If two or more rats of the same sex die, or if three or more rats of either sex died at the initial dose level of 5.0 g/kg, a preliminary screen was run prior to selecting doses for the LD 50. Based on the results of the preliminary screen, doses were selected in an attempt to achieve an adequate dose response curve for calculation of an LD 50. If a 5.0 g/kg level was necessary for calculation of the LD 50, it was repeated. All dose levels were run simultaneously. For liquid materials, the dose was based on the sample weight as calculated from the specific gravity. The vehicle, if any, was chosen because of its lack of known toxicity, lack of physiologi effect and because it is relatively unreactive with other chemical substances.

Observations - The rats were observed 1, 2 and 4 hours after dosing and once daily for 14 days. Mortality, toxicity and pharmacological effects were recorded. Body weights were recorded pretest and in the survivors at 14 days.

Termination - At 14 days the survivors were sacrificed. All animals were examined for gross pathology.

The LD 50 was calculated, if possible, according to the method of Litchfield, J.T. Jr., & F. Wilcoxon, JPET 96:99, 1949 or Horn H.J. Biometrics 12:311, 1956.

RESULTS

LD 50: Greater than 5.0 g/kg of body weight

MORTALITY: 0/5 Male - 0/5 Female

BODY WEIGHTS AND DOSE VOLUME:

An. # & Sex	Dose Volume cc	WEIGHTS - g Day 0 g	Day 14 g
1-M	3.8	230	375
2-M	3.4	205	314
3-M	3.5	208	304
4-M	3.6	216	347
5-M	3.5	207	331
6-F	3.2	194	251
7-F	3.1	186	252
8-F	3.2	195	252
9-F	3.2	193	253
10-F	3.1	188	272

TEST FOR SINGLE DOSE/ORAL LD 50 IN RATS — T O X I C I T Y — Project #: MB 80-4646
Page -3- — Sample #: 1207-00

@ 5.0 g/kg AN.# & Sex	HOUR 1	HOUR 2	HOUR 4	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14
1-M																	
2-M																	
3-M							D										
4-M																	
5-M																	
6-F																	
7-F																	
8-F																	
9-F																	
10-F				1	1	1	1	1	1	1	1	1	1				

AT ALL TIMES NOT MENTIONED, ALL ANIMALS APPEARED NORMAL

CODE: 1 = anogenital area stained yellow
D = diarrhea

NECROPSY OBSERVATIONS: All animals, sacrificed on Day 14, were normal.

CONCLUSION

The test article is not toxic, as defined in 16 CFR 1500.3.

SUMMARY OF DATA

5/5 male and 5/5 female rats survived an oral dose of Alizarine Blue 2GA at 5.0 g/kg in generally good health.

Body weights and necropsy findings were normal.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the study, raw data and final report on the following dates;

May 29, 1980
June 3, 1980
June 24, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 6/30
Oscar M. Moreno, Ph.D.
Daniel R. Cerven 2 July 80
Daniel R. Cerven, Study Direct
Elizabeth J. Altenbach 7/1
Elizabeth J. Altenbach, Archiv
Submitted: 7/01/80

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

FIRE FIGHTERS SHOULD BE EQUIPPED WITH SELF CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

UNUSUAL HAZARDS:
DUST MAY BE EXPLOSIVE IF MIXED WITH AIR IN CRITICAL PROPORTIONS AND IN THE PRESENCE OF SOURCE OF IGNITION.

SECTION VI- HEALTH HAZARDS INFORMATION

EFFECTS OF OVEREXPOSURE:
NO ACUTE OR CHRONIC EFFECTS ARE KNOWN.
HOWEVER, ANY MATERIAL THAT GETS INTO THE EYES OR ON SKIN MAY BE IRRITATING.

EMERGENCY FIRST AID PROCEDURES:

INHALATION: IF INHALED, MOVE TO FRESH AIR. IF DIFFICULTY IN BREATHING, ADMINISTER OXYGEN AND GET IMMEDIATE MEDICAL ATTENTION.

INGESTION: IF SWALLOWED, GIVE SEVERAL GLASSES OF MILK OR WATER AND INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION. NEVER GIVE FLUIDS OR INDUCE VOMITING IF PATIENT IS UNCONSCIOUS OR HAS CONVULSIONS.

EYE CONTACT: FLUSH EYES WITH FLOWING WATER FOR AT LEAST 15 MINUTES. IF IRRITATION DEVELOPES, CONSULT A PHYSICIAN.

SKIN CONTACT: WASH AFFECTED SKIN AREAS THOROUGHLY WITH SOAP AND WATER. IF IRRITION DEVELOPS, CONSULT A PHYSICIAN. REMOVE AND LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

SECTION VII- REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID: NONE KNOWN

POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE KNOWN

INCOMPATIBLE MATERIALS: NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS:
BURNING WILL PRODUCE OXIDES OF CARBON AND NITROGEN.

SECTION VIII- PRECAUTIONS FOR SAFE HANDLING, USE AND DISPOSAL

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
WHERE EXPOSURE IS NOT KNOWN, WEAR A NIOSH APPROVED DUST RESPIRATOR AND SWEEP OR SHOVEL SPILLS, USING AN ABSORBANT TO

PREVENT DUSTING, INTO A WASTE DISPOSAL CONTAINER. WASH DOWN THE AREA WITH WATER.

WASTE DISPOSAL METHOD:
DISPOSAL MUST BE IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS.

SECTION IX- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH APPROVED DUST RESPIRATOR.

VENTILATION: LOCAL EXHAUST TO MINIMIZE EXPOSURE.

PROTECTIVE GLOVES: WEAR RUBBER GLOVES.

EYE PROTECTION: WEAR GOGGLES.

OTHER PROTECTIVE MEASURES: WEAR APRON, COVERALLS, BOOTS AND LONG SLEEVE SHIRT TO PREVENT SKIN CONTACT.

NOTE: EYEWASH FOUNTAINS SHOULD BE EASILY ACCESIBLE. SHOWER AFTER HANDLING THIS PRODUCT. WORK CLOTHES SHOULD BE WASHED BEFORE REUSE. BEFORE EATING, DRINKING OR SMOKING, WASH HANDS AND FACE WITH SOAP AND WATER.

SECTION X- SPECIAL PRECAUTIONS

IN ACCORDANCE WITH GOOD INDUSTRIAL PRACTICES, HANDLE WITH CARE AND AVOID PERSONAL CONTACT.

SECTION XI - HAZARD RATING

HMIS RATING: HEALTH- 1
FIRE- 1
REACTIVITY- 0
PERSONAL PROTECTION- C

DISPERSE BLUE 56

C.I. 63285

CAS 12217-79-7

MATERIAL SAFETY DATA SHEETS

INTERNATIONAL DYESTUFFS CORPORATION

SECTION I- IDENTIFICATION OF PRODUCT

TRADE NAME: ELCOSPERSE BLUE JS

COLOR INDEX GENERIC NAME: DISPERSE BLUE 56

COLOR INDEX NUMBER: NONE CAS NUMBER: 12217-79-7

CHEMICAL FAMILY: ANTHRAQUINONE

MANUFACTURER/DISTRIBUTOR: INTERNATIONAL DYESTUFFS CORPORATION
50 PAGE ROAD
P O BOX 2169
CLIFTON, N.J. 07015

EMERGENCY PHONE NUMBER: 201 778-0122

DATE PREPARED: NOVEMBER 15, 1985

PREPARED BY: Lawrence J. Rosen
Vice President/Product Safety Director

SECTION II- WARNING

MAY CAUSE SKIN AND EYE IRRITATION

SECTION III- HAZARDOUS INGREDIENTS

NONE AS PER 29 CFR PART 1910.1200

SECTION IV - PHYSICAL DATA

APPEARANCE: BLACK POWDER

ODOR: NONE

SOLUBILITY IN WATER: DISPERSIBLE

BULK DENSITY: 0.40 - 0.45

SECTION V- FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT: NOT APPLICABLE

EXTINGUISHING MEDIA: FOAM, CO_2, DRY CHEMICAL OR WATER SPRAY

SPECIAL FIRE FIGHTING PROCEDURES:

ACID BLUE 45

C.I. 63010

CAS 2861-02-1

MATERIAL SAFETY DATA SHEETS

INTERNATIONAL DYESTUFFS CORPORATION

SECTION I- IDENTIFICATION OF PRODUCT

TRADE NAME: ALIZARINE BLUE BCN

COLOR INDEX GENERIC NAME: ACID BLUE 45

COLOR INDEX NUMBER: 63010 CAS NUMBER: 2861-02-1

CHEMICAL FAMILY: ANTHRAQUINONE

FORMULA: C14 H10 N2 O10 S2. 2Na

MANUFACTURER/DISTRIBUTOR: INTERNATIONAL DYESTUFFS CORPORATION
50 PAGE ROAD
P O BOX 2169
CLIFTON, N.J. 07015

EMERGENCY PHONE NUMBER: 201 778-0122

DATE PREPARED: NOVEMBER 15, 1985

PREPARED BY: Lawrence J. Rosen
Vice President/Product Safety Director

SECTION II- WARNING

MAY CAUSE EYE AND SKIN IRRITATION

SECTION III- HAZARDOUS INGREDIENTS

NONE AS PER 29CFR PART 1910.1200

SECTION IV - PHYSICAL DATA

APPEARANCE: BLUE POWDER

ODOR: SLIGHT ODOR

SOLUBILITY IN WATER: 15 g/l @ 90 C

MELTING POINT: > 200 C

PH : 10.8 @ 100 g/l WATER

SECTION V- FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT: NOT APPLICABLE

EXTINGUISHING MEDIA: FOAM, CO2, DRY CHEMICAL OR WATER SPRAY

SPECIAL FIRE FIGHTING PROCEDURES:

FIRE FIGHTERS SHOULD BE EQUIPPED WITH SELF CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

UNUSUAL HAZARDS:
DUST MAY BE EXPLOSIVE IF MIXED WITH AIR IN CRITICAL PROPORTIONS AND IN THE PRESENCE OF SOURCE OF IGNITION.

SECTION VI- HEALTH HAZARDS INFORMATION

TOXICOLOGICAL DATA: RAT, ORAL LD50: >5000 mg/kg
RABBIT, SKIN: NOT KNOWN
RABBIT, EYES: NOT KNOWN

EFFECTS OF OVEREXPOSURE:

NO INFORMATION FOUND IN STANDARD REFERENCES OR DATABASES

EMERGENCY FIRST AID PROCEDURES:

INHALATION: IF INHALED, MOVE TO FRESH AIR. IF DIFFICULTY IN BREATHING, ADMINISTER OXYGEN AND GET IMMEDIATE MEDICAL ATTENTION.

INGESTION: IF SWALLOWED, GIVE SEVERAL GLASSES OF MILK OR WATER AND INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION. NEVER GIVE FLUIDS OR INDUCE VOMITING IF PATIENT IS UNCONSCIOUS OR HAS CONVULSIONS

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SKIN CONTACT: WASH AFFECTED SKIN AREAS THOROUGHLY WITH SOAP AND WATER. IF IRRITION DEVELOPS, CONSULT A PHYSICIAN. REMOVE AND LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

SECTION VII- REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID: NONE KNOWN

POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE KNOWN

INCOMPATIBLE MATERIALS: NONE KNOWN

HAZARDOUS DECOMPOSITION PRODUCTS:
BURNING WILL PRODUCE OXIDES OF CARBON AND NITROGEN. OXIDES OF SULFUR MAY ALSO BE PRODUCED.

SECTION VIII- PRECAUTIONS FOR SAFE HANDLING, USE AND DISPOSAL

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
WHERE EXPOSURE IS NOT KNOWN, WEAR A NIOSH APPROVED DUST

RESPIRATOR AND SWEEP OR SHOVEL SPILLS, USING AN ABSORBANT TO PREVENT DUSTING, INTO A WASTE DISPOSAL CONTAINER. WASH DOWN THE AREA WITH WATER.

WASTE DISPOSAL METHOD:
DISPOSAL MUST BE IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS.

SECTION IX- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: NIOSH APPROVED DUST RESPIRATOR.

VENTILATION: LOCAL EXHAUST TO MINIMIZE EXPOSURE.

PROTECTIVE GLOVES: WEAR RUBBER GLOVES.

EYE PROTECTION: WEAR GOGGLES.

OTHER PROTECTIVE MEASURES: WEAR APRON, COVERALLS, BOOTS AND LONG SLEEVE SHIRT TO PREVENT SKIN CONTACT.

NOTE: EYEWASH FOUNTAINS SHOULD BE EASILY ACCESIBLE. SHOWER AFTER HANDLING THIS PRODUCT. WORK CLOTHES SHOULD BE WASHED BEFORE REUSE. BEFORE EATING, DRINKING OR SMOKING, WASH HANDS AND FACE WITH SOAP AND WATER.

SECTION X- SPECIAL PRECAUTIONS

IN ACCORDANCE WITH GOOD INDUSTRIAL PRACTICES, HANDLE WITH CARE AND AVOID PERSONAL CONTACT.

SECTION XI - HAZARD RATING

HMIS RATING: HEALTH- 1
FIRE- 1
REACTIVITY- 0
PERSONAL PROTECTION- SD

ACID BLUE 45

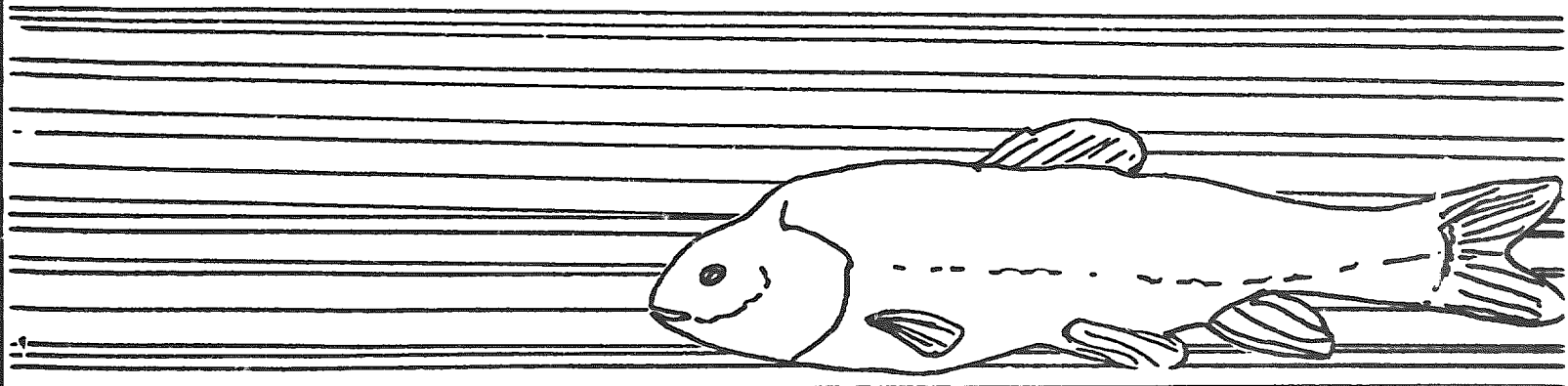
C.I. 63010

CAS 2861-02-1

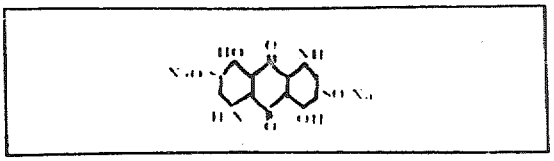
UNC WASTEWATER
RESEARCH CENTER

THE UNIVERSITY OF NORTH CAROLINA
Department of Environmental
Sciences and Engineering
School of Public Health
CHAPEL HILL, N. C. 27514

ACUTE TOXICITY OF 46 SELECTED DYES TO THE FATHEAD MINNOW, *Pimephales promelas*

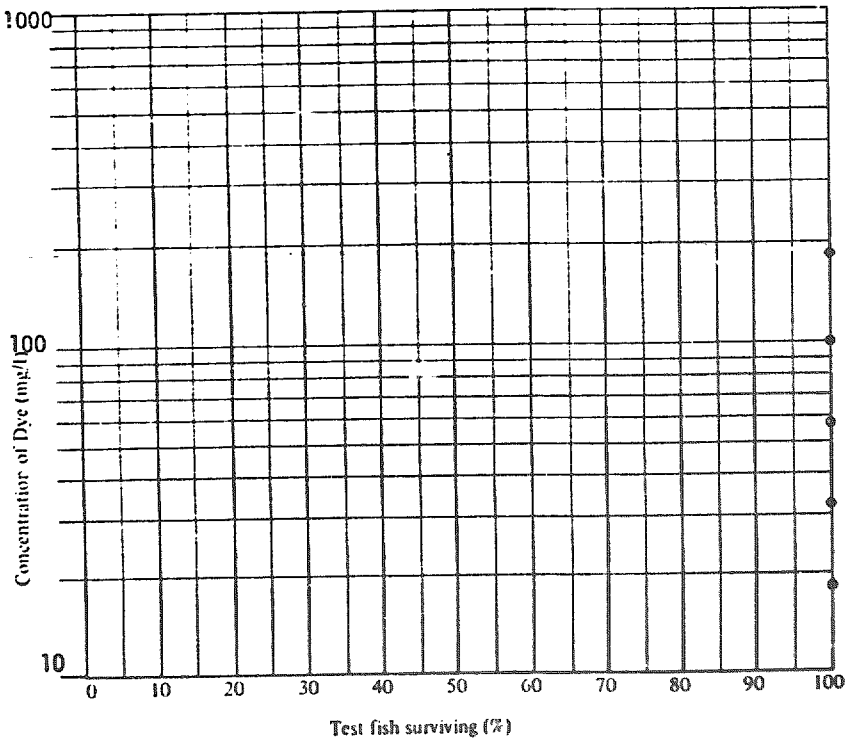


LINDA W. LITTLE AND JAMES C. LAMB III



Dye formula

1. Test dye Acid Blue 45 C.I. No. 63010 Date tested 3/6-3/10/72
   Supplier American Dye Manufacturers Inst. Form supplied Dry powder
   Conditions of storage Stored in dark at approximately 20 C.
2. Test fish Fathead minnow (Pimephales promelas)
   Supplier Windmill Fish Hatcheries Number per jar 10
   Avg. wt. 0.67 g. range, 0.28 to 2.94 g. Avg. length 4.33 cm. range, 3.50 to 7.00 cm.
3. Test jars: Material glass capacity 19 l. dimensions 25 cm(d) x 47 cm(h).
4. Dilution water charcoal-sand filtered Chapel Hill tap water
   Volume per jar 15 l. depth in jar 30 cm. pH 6.8 TOC 4 mg/l. Fe <0.02 mg/l.
   Al <1.0 mg/l. Mg 1.4 mg/l. Ca 5.5 mg/l. total dissolved solids 59 mg/l.
   turbidity 0 JTU. total alkalinity 15 mg/l as $CaCO_3$.
5. Procedure Static
6. Test conditions Temperature 15 C. range during test. 13.2 to 17.2 C. Initial dissolved oxygen 6.9-7.5 mg/l. range during test. 5.6 to 7.5 mg/l. Initial pH 6.9-8.7 ; range during test. 6.7 to 8.7 .
7. 96-hour TL_{50} >180 mg/l. (Aerated 5 min each at 48 hr)



DISPERSE BLUE 56

C.I. 63285

CAS 12217-79-7

OR

CAS 27312-17-0

L-ESLFT-8884.12/13

MATERIAL SAFETY DATA SHEET

RECEIVED DEC 3 1985

Required under OSHA's Hazard Communication Standard 29 CFR 1910-1200

IDENTITY (As Used on Label and List) Sumikaron Blue E-FBL (C.I. Disperse Blue 56)

Section I

Manufacturer's Name: Sumitomo Chemical Co., Ltd.	Emergency Telephone Number
Address (Number, Street, City, State, and ZIP Code): 15, 5-Chome, Kitahama, Higashi-ku, Osaka 541, Japan	Telephone Number for Information: 06-220-3774 (Japan)
	Date Prepared: 15th November, 1985
	Signature of Preparer (Optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (Optional)
Health Hazards : C.I. Disperse Blue 56				
Eye irritant				
Skin irritant				

Section III - Physical Characteristics

Boiling Point	Not applicable	Specific Gravity (H_2O=1)	0.5
Vapor Pressure (mm Hg)	Not applicable	Melting Point	Higher than 150°C
Vapor Density (AIR=1)	Not applicable	Evaporation Rate (Butyl Acetate=1)	Not applicable

Solubility in Water: Negligible

Appearance and Odor: Dark bluish powder, Odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Not applicable	Flammable Limits	LEL	UEL
		Not applicable		

Extinguishing Media: Water, Carbon dioxide, Foam, Dry chemical

Special Fire Fighting Procedures: Firefighters should be provided with air-supplied respirator

Unusual Fire and Explosion Hazards: None

L-ESL-FT-8884 13/13

Sumikaron Blue E-FBL

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid) None

Hazardous Decomposition or Byproducts Forms SO_x, NO_x, CO when heated to burning

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI - Health Hazard Data

Route(s) of Entry Inhalation? Skin? X Ingestion?

Health Hazards (Acute and Chronic)

Skin-irritant (rabbit), LD_{50} (oral-mouse)

Eye-irritant (rabbit) more than 5,000 mg/kg

Carcinogenicity: NTP? None IARC Monographs? None OSHA Regulated? None

Signs and Symptoms of Exposure In case of excess contact with eyes or skin without first aid, causes a reversible inflammatory effect on eyes or skin.

Medical Conditions Generally Aggravated by Exposure Congestion of eyes

Erythema of skin

Emergency and First Aid Procedures In case of contact with eyes or skin, immediately flush eyes or skin with plenty of water, and in case of ingestion, immediately induce vomiting, and contact a physician.

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Sweep up and shovel into suitable containers and then wash out with water.

Waste Disposal Method

To be able to be incinerated by the adequate method.

Precautions to Be Taken in Handling and Storing

No problem when stored or handled at room temperature.

Other Precautions

None known to Sumitomo Chemical

Section VIII - Control Measures

Respiratory Protection (Specify Type) None required under normal handling, but use adequate ventilation in workroom.

Ventilation	Local Exhaust: Acceptable	Special	
	Mechanical (General): Preferred	Other	

Protective Gloves: Rubber gloves | Eye Protection: Safety goggles

Other Protective Clothing or Equipment: Eye bath, mask, coveralls

Work/Hygienic Practices: None known to Sumitomo Chemical

DISPERSE BLUE 56

C.I. 63285

CAS 12217-79-7

OR

CAS 27312-17-0

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
DISPERSE BLUE 56	

Section I

Manufacturer's Name CHINA NATIONAL CHEMICALS IMPORT & EXPORT CORP.	Emergency Telephone Number 211540
Address (Number, Street, City, State, and ZIP Code) ER LI GOU, XI VIAO	Telephone Number for Information
BEIJING, PEOPLES REPUBLIC OF CHINA	Date Prepared November 1986
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Not applicable	No	No	None	

Section III — Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H_2O = 1)	0.5
Vapor Pressure (mm Hg.)	N/A	Melting Point	> 150°C
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility in Water: Dispersible

Appearance and Odor: Blue powder, no odor

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
N/A	N/A		

Extinguishing Media: Water, Dry chemical, CO_2, Foam

Special Fire Fighting Procedures: For fighting fires, wear SCBA

Unusual Fire and Explosion Hazards: None expected

(Reproduce locally)

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		None
	Stable	X	

Incompatibility (*Materials to Avoid*)
None known

Hazardous Decomposition or Byproducts
Burning will prcduce oxides of Carbon & Nitrogen

Hazardous Polymerization			Conditions to Avoid
	May Occur		None
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? X Skin? X Ingestion? X

Health Hazards (*Acute and Chronic*)
LD50, oral (animal) > 5000 mg/kg

Effects to eyes (animal) irritating

Skin irritation (animal) irritating

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Signs and Symptoms of Exposure
None known

Medical Conditions
Generally Aggravated by Exposure

Emergency and First Aid Procedures Inhalation:if inhaled, move to fresh air. If breathing difficult give oxygen and get medical attention right away. Eye Contact:flush eyes with flowing water for at least 15 minutes, holding eyelids apart to irrigate thoroughly. Get medical attention rig away. Skin Contact:Wash affected skin areas thoroughly with soap & water.If irritation develc

Section VII — Precautions for Safe Handling and Use

*consult physician. Ingestion:If swallowed, dilu with water & induce vomiting.Get immediate medic

Steps to Be Taken in Case Material Is Released or Spilled attention.Never give fluids or induce vomiting if patie is unconscious or has convulsions.
Using an absorbent to prevent dusting, sweep or shovel into a container.

Wash down the area with water.

Waste Disposal Method Bury or incinerate according to Federal, State, and Local regulations.
Drum Disposal: Containers should be triple rinsed with water before disposal.

Precautions to Be Taken in Handling and Storing
In accordance with good industrial practice, handle with care and avoid contac

Other Precautions

Section VIII — Control Measures

Respiratory Protection (*Specify Type*) NIOSH approved dust respirator.

Ventilation			
	Local Exhaust	X	Special
	Mechanical (*General*)		Other

Protective Gloves: Rubber gloves
Eye Protection: Goggles

Other Protective Clothing or Equipment
Apron, coverall to minimize skin contact.

Work/Hygienic Practices

HMIS CODE: H=1, F=1, R=1, PP=SD

DISPERSE BLUE 56

C.I. 63285

CAS 12217-79-7

OR

CAS 27312-17-0

MATERIAL SAFETY DATA SHEET

MANUFACTURING DIV ADDRESS

MOBAY CHEMICAL CORPORATION-Dyes and Pigments Division
PO Box 385 Union Metropolitan Park
Union, New Jersey 07083

DATA SHEET NO
DIVISION
ISSUE DATE March 1984
ISSUED BY
SUPERSEDES ISSUE OF

CHEMTREC CHEMICAL TRANSPORTATION EMERGENCY TELEPHONE NO: 800-424-9300; DISTRICT OF COLUMBIA: 202-483-7616	MOBAY NON-TRANSPORTATION EMERGENCY NO.: (803) 553-3155
PRODUCT NAME RESOLIN BLUE LBF	PRODUCT CODE NUMBER 45599,01
CHEMICAL FAMILY Anthraquinone	CHEMICAL NAME & SYNONYMS CI Disperse Blue 56
CHEMICAL FORMULA Proprietary	TRADE NAME & SYNONYMS Same as product name

HAZARDOUS INGREDIENTS

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES	%	CURRENT TLV
None as per 29 CFR section 1910.1000 subpart Z		

PHYSICAL DATA

APPEARANCE (SOLID, LIQUID, GAS)	MOLECULAR WEIGHT	MELT POINT	SPECIFIC GRAVITY
Powder	NA	NA	NA
VAPOR DENSITY (AIR=1)	**COLOR**	**BULK DENSITY**	**BOILING POINT**
NA	Blue	NE	NA
VAPOR PRESSURE	**SOLUBILITY (WATER)**	**ODOR**	**% VOLATILE BY VOLUME**
NA	Dispersible	None	NA

FIRE & EXPLOSION DATA

FLASH POINT °F (METHOD USED)	FLAMMABLE LIMIT	EXTINGUISHING MEDIA
NA	Lel NA Uel NA	Water, dry chemical, CO_2, fc

SPECIAL FIRE FIGHTING PROCEDURES, UNUSUAL FIRE OR EXPLOSION HAZARDS

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.

Avoid dusting. Dust can form explosive mixtures with air.

TOXICITY DATA

LD50, ORAL (INGESTION)	LD50, DERMAL (SKIN CONTACT)	INHALATION (LC50)
> 5000 mg/kg	NE	NE
FISH, LC50 (LETHAL CONCENTRATION)	**TLV (UNITS) (THRESHOLD LIMIT VALUE)**	**SKIN IRRITATION**
> 500 mg/l - 48 hr	NE	Slight irritant
EFFECTS TO EYE	**EFFECTS TO LUNG**	**OTHER**
Non-irritant	NE	

EMERGENCY AND FIRST AID PROCEDURES, EFFECTS OF OVER EXPOSURE

For eyes: Flush thoroughly with water. Get prompt medical attention.

For skin: Flush with water.

N.E. = NOT ESTABLISHED N.A. = NOT APPLICABLE A.I. = ACTIVE INGREDIENT

REACTIVITY DATA

STABILITY	CONDITIONS TO AVOID
Stable	NA
POLYMERIZATION	**CONDITIONS TO AVOID**
None	NA

INCOMPATABILITY (MATERIALS TO AVOID)
Oxidizing and reducing agents may destroy color.

HAZARDOUS DECOMPOSITION PRODUCTS
Burning may release CO, CO_2, HBr, and oxides of nitrogen and sulfur.

SPILL OR LEAK PROCEDURE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Spills should be swept up and placed in containers. Spill area can be washed with water; collect wash water for approved disposal.

WASTE DISPOSAL METHOD
Waste disposal should be in accordance with existing federal, state and local environmental control regulations.

SPECIAL PROTECTION DATA

RESPIRATOR TYPE
Use a NIOSH approved dust respirator

EYE PROTECTION	GLOVES
Safety goggles	Rubber with gauntlets

OTHER PROTECTIVE EQUIPMENT
Use local exhaust if dust is a problem

Emergency showers and eye wash stations should be available

SPECIAL PRECAUTIONS & STORAGE DATA

STORAGE TEMPERATURE (OPTIMUM)	AVERAGE SHELF LIFE
Min. NA Max. NA	NE

SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE)
None

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in dry place, away from excessive heat, in original or similar waterproof containers. Reseal containers immediately after use. Avoid unnecessary contact.

SHIPPING DATA

D.O.T. SHIPPING NAME		TECHNICAL SHIPPING NAME	
Non-regulated		RESOLIN BLUE LBF	
D.O.T. HAZARD CLASSIFICATION	**UN/NA NO.**	**R.Q.**	
Non-regulated			
D.O.T. LABELS REQUIRED	**LABEL**	**T.S.C.A. STATUS**	
None		Complies	
REASON FOR ISSUE:	**FRT. CLASS BULK:**		
New Product	**FRT. CLASS PKG.**		
INITIATED BY: TITLE:		**APPROVED BY:** TITLE:	
R. Eagle, Product Safety Coordinator		H. Vyas, Manager, Ecology Department	
DATE INITIATED:		**DATE APPROVED:**	
March 1984 R Eagle		March 1984. Hvyas	

N.E. = NOT ESTABLISHED N.A. = NOT APPLICABLE A.I. = ACTIVE INGREDIENT

DISPERSE BLUE 56

C.I. 63285

CAS 12217-79-7

OR

CAS 27312-17-0

DIVISION ADDRESS

MOBAY CHEMICAL CORPORATION
Dyes and Pigments Division
Mobay Road
Pittsburgh, PA 15205

ISSUE DATE Feb. 11, 1986
SUPERSEDES December 1984

TRANSPORTATION EMERGENCY: CALL CHEMTREC
TELEPHONE NO: 800-424-9300. DISTRICT OF COLUMBIA: 202-483-7616

MOBAY NON-TRANSPORTATION EMERGENCY NO.:
(412) 923-1800

RECEIVED
JUN 24 1986

I. PRODUCT IDENTIFICATION

PRODUCT NAME.....: Resolin Blue FBL
PRODUCT CODE NUMBER..: 45506,12
CHEMICAL FAMILY.....: Anthraquinone
CI NAME.....: CI Disperse Blue 56
CAS NUMBER.....: Proprietary
T.S.C.A. STATUS.....: In compliance

II. HAZARDOUS INGREDIENTS

III. PHYSICAL DATA

APPEARANCE.....: Powder
COLOR.....: Blue
ODOR.....: Mild aromatic
SOLUBILITY IN WATER..: Dispersible
pH.....: 9.5 - 10.5

IV. FIRE & EXPLOSION DATA

FLASH POINT.....: Not applicable
EXTINGUISHING MEDIA..: Water, dry chemical, CO_2, foam
SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS:
Firefighters should be equipped with with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.
Avoid dusting. Dust can form explosive mixtures with air.

V. HEALTH EFFECTS DATA

ANIMAL TOXICITY -
ORAL, LD50
(INGESTION).....: Greater than 5,000 mg/kg - rats
FISH, LC50.....: Greater than 10 mg/l - 48 h - Leuciscus idus (L)
EYE EFFECTS.....: slight irritant - rabbits
SKIN EFFECTS.....: slight irritant - rabbits
HUMAN EFFECTS
OF OVEREXPOSURE...: Because the complete acute and chronic hazards of this product have not been determined, employees should avoid exposure to it. Avoid contact with skin, eyes and clothing. Similar products have been shown to cause a temporary skin reaction (allergic contact dermatitis) in some people.

VI. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT.....:	Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of product remains (approximately 10-20 minutes). Get medical attention. Do not wear contact lenses while handling this product.
SKIN CONTACT.....:	Immediately wash skin with soap and plenty of water. If a temporary skin reaction (rash) occurs it should be treated as allergic contact dermatitis. Launder contaminated clothing before reuse.
INGESTION.....:	If this product has been swallowed, do not induce vomiting. Qualified medical personnel should remove the product by gastric levage and catharsis.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS

EYE PROTECTION.....:	Employees should wear protective goggles.
SKIN PROTECTION....:	This material may be absorbed via the dermal route if prolonged or widespread skin contact occurs. Employees should avoid skin contact by wearing protective clothing. Long sleeve shirts, pants, rubber gloves, and rubber boots are recommended. Additional protection such as impervious suits are recommended when the potential for dermal contact is significant. Employees should wash their hands and face before eating and drinking, and shower thoroughly before leaving work.
RESPIRATORY PROTECTION.....:	Employees should avoid inhalation of dusts. Wherever potential for dusting exists an appropriate NIOSH approved respirator with dust filter should be worn.
VENTILATION.....:	Use local ventilation if dusting is a problem.
OTHER.....:	Emergency showers and eye wash stations should be available.

VIII. REACTIVITY DATA

STABILITY.....:	Stable
POLYMERIZATION.....:	Not applicable
INCOMPATIBILITY (MATERIALS TO AVOID).....:	Oxidizing and reducing agents.
HAZARDOUS DECOMPOSITION PRODUCTS.....:	CO, CO_2, oxides of nitrogen and sulfur, HBr, and potentially toxic fumes.

IX. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Spills should be swept up and placed in containers. Spill area can be washed with water; collect wash water for approved disposal.
WASTE DISPOSAL METHOD: Waste disposal should be in accordance with existing federal, state, and local environmental regulations.

X. SPECIAL PRECAUTIONS & STORAGE DATA

PRECAUTIONS TO BE TAKEN
IN HANDLING AND STORING: Store in dry place, away from excessive heat, in original or similar waterproof containers. Reseal containers immediately after use. Avoid unnecessary contact.

XI. SHIPPING DATA

TECHNICAL SHIPPING NAME: Anthraquinone Dyestuff
D.O.T. HAZARD
CLASSIFICATION.....: Non-regulated
D.O.T. LABELS REQUIRED.: None
FRT. CLASS BULK.....:
FRT. CLASS PKG.....:
PRODUCT LABEL.....: 02A

XII. APPROVALS

REASON FOR ISSUE.....: Revision

DATE APPROVED.....: November 1985

APPROVED BY.....: J. Mostowy

TITLE.....: Senior Regulatory Compliance Specialist

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

Cannon Laboratories, Inc.

P. O. Box 3627, Reading, Pa. 19605 (215) 375-4536

ACUTE INHALATION TOXICITY STUDY OF

DISPERSE PINK N GRANULES 100%

CODE NO. 4080-40

BATCH NO. 69, TR#77-1037

ISSUED BY: CANNON LABORATORIES, INC.

SUBMITTED TO:

TOMS RIVER CHEMICAL CORPORATION
BOX 71
TOMS RIVER, NEW JERSEY 08753

DATE: FEBRUARY 20, 1978

LABORATORY NUMBER: 7E-9483

KAT

Cannon Laboratories, Inc.

AUTHORIZATION:

This investigation was authorized by the Toms River Chemical Corporation, Box 71, Toms River, New Jersey 08753 in a letter dated December 16, 1977 from Walter R. Payne, Director of Safety.

For this test procedure "Disperse Pink N Granules 100%, Code No. 4080-40, Batch No. 69, TR#77-1037", a dark red powder, was used.

UNIVERSITY OF MIAMI
CORAL GABLES, FLORIDA 33124

UM Nos. 77, 78, 79, 80, 81, 83
Report No. 46

Mailing Address:
RESEARCH AND TEACHING CENTER
OF TOXICOLOGY
SCHOOL OF MEDICINE
P. O. BOX 248216

Location:
SOUTH CAMPUS
BUILDING 6

Skin Irritation Tests in Rabbits

-10 skin applications over a period of 12 - 14 days-

of the following compounds:

Disperse Red RB Paste, Mix 16 Stand., 4079-20 -- TRC 76-848; UM 78

Six albino rabbits were used for each material. The hair was clipped from the back of each animal. A total of 10 doses of each material were applied to each of three rabbits with intact skin and to each of three rabbits with abraded skin. The treated areas measured 12 x 18 cm per rabbit, and the volume of the material applied was approximately 2.0 ml per rabbit (equal to 0.5 gram of a 40% solution/suspension). This was spread and rubbed evenly onto the skin and into the abrasions once a day on five days of the week, over a period of 12 to 14 days. The areas exposed covered approximately 10% of the total body surface of a rabbit weighing between 2.0 and 2.5 kg.

UM No. 78 (Disperse Red RB Paste) - This material is a liquid and was administered as received.

I.D. No. of Rabbit	Skin	Body Weight At Start kg	Body Weight After 12 Days kg	GAIN in Body Weight kg
1	Intact	2.84	3.30	0.46
2	"	3.56	3.86	0.30
3	"	2.82	3.32	0.50
4	Abraded	2.64	3.41	0.77
5	"	2.66	3.24	0.58
6	"	3.14	3.59	0.45

Effects Noted: The compound did not produce signs of skin irritation. The abraded areas had nearly healed completely at the completion of the experiment. Gain in body weight was normal. The color of the material is brown; it stained the skin pink and the fur brown. The urine was brown in color. Conclusion: The material identified as UM 78 is not a skin irritant.

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

MB Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

ACUTE DERMAL TOXICITY IN RABBITS

For: Toms River Chemical Corporation

Project number MB 77- 2432
Sample: Disperse Pink N Granules
Mix # 69
Concentration : 100%
TR # 77-1012 · Code No: 4080-40

Material received: 12/21/77
Test started: 1/18/78
Test ended: 2/01/78
Description: Red Powder-use as 50% solution in distilled Water.

New Zealand White rabbits approximately 8 to 11 weeks of age were received in good health from our local supplier and remained in good health during the equilibration period in this laboratory. The rabbits were equilibrated for at least 7 days. The rabbits were housed in elevated wire mesh cages in temperature controlled rooms reserved exclusively for rabbits on acute tests. Purina Rabbit Chow and water from bottles were available ad libitum.

Twenty four hours prior to dosing the backs of the rabbits were clipped free of fur with an Oster ANG-RA clipper head designed specifically for clipping rabbits. The rabbits were returned to their cages overnight. Just prior to dosing one half of the rabbits were abraded with a 21 gauge bent tip needle. The abrasions, made every 2 to 3 cm longitudinally, scratched the stratum corneum but did not disturb the derma or produce bleeding.

The test material was applied to the backs of two male and two female rabbits at a dose of 2.0 g/kg. The test site was covered with gauze and the trunk was wrapped with impervious material for 24 hours. Following removal of the binder at 24 hours the test site was washed with warm tap water. One hour after washing the test sites were graded for skin irritation according to the attached scale. Skin sites were read again at 7 and 14 days. Body weights were recorded pretest and at 7 and 14 days. The rabbits were observed daily for 14 days for signs of toxicity or mortality. Necropsies were performed on all rabbits.

RESULTS: The acute dermal LD 50 is greater than 2.0 g/kg.

Mortality: 0/4

Toxicity: Chromorhinorrhea, Yellow Exudate around nose/mouth, and bloated abdomen noted in Animal #3 - days 2, 3, 4, 13 and 14.

At all other times not mentioned, all animals appeared normal.

Respectfully submitted,

MB

Oscar M. Moreno

Oscar M. Moreno, Ph.D.
President
3/20/78

Individual Body Weights and Skin Grades

Rabbit number	Sex	Weights - kg 0	7	14	Redness 25h	7	14	Edema 25h	7	14
1	M	2.2	2.2	2.0	•	0	0	0	0	0
2	M	2.2	2.2	1.9	•	0	0	0	0	0
3	F	2.3	2.4	2.5	•	0	0	0	0	0
4	F	2.0	2.2	2.3	•	0	0	0	0	0

•Unable to determine redness due to color of material.

Necropsy Observations:

	Number with Sign
Normal	3
Liver Dark (purple)	1

Evaluation of Skin Reactions

	Value
Erythema & Eschar Formation:	
No erythema	0
Very slight erythema (barely perceptible)	1
Well defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4
Edema Formation:	
No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well defined by definite raising)	2
Moderate edema (raised approximately 1 millimeter)	3
Severe edema (raised more than 1 millimeter and extending beyond the area of exposure)	4

MB Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

REPORT ON RABBIT EYE IRRITATION

For: Toms River Chemical Corporation

Project number MB 77- 2432
Sample Disperse Pink N Granules
Mix # 69
Concentration : 100% CODE NO: 4080-40
TR # 77-1012

Material received: 12/21/77
Test started: 1/17/78
Test ended: 1/20/78
Description: Red Powder

This study was designed to determine ocular irritation potential of a material when instilled in the rabbit eye.

Six New Zealand White rabbits weighing approximately 2.5 kg were housed individually in suspended wire mesh cages in temperature and light controlled rooms. Purina rabbit chow and water were available ad libitum.

The rabbits were equilibrated in this laboratory for at least seven days. Rabbits with irritated or damaged eyes were not used in this test.

The test material (0.1 ml liquid or 0.1 ml-equivalent solid) was instilled in the lower conjunctival sac of one eye of each rabbit and the lids held closed for approximately one second to insure even distribution of the test material over all surfaces of the eye. The other eye served as an untreated control.

The eyes were examined and graded for irritation and corneal damage at 1, 24, 48 and 72 hours after instillation with a hand slit lamp. Eyes not returning to a score of zero by 72 hours were graded on the seventh day after instillation. Eyes still not returning to a score of zero were graded on the fourteenth day after instillation. All eyes were examined by applying 1 drop of 1% fluorescein sodium ophthalmic solution, U.S.P., to the cornea pre-test, 24, 72 hours and 7 and 14 days after instillation.

The ocular reactions were graded and interpreted as described in "Appraisal of the Safety of Food, Drugs, and Cosmetics", Association of Food and Drug Officials of the United States, 1959 with the assistance of the "Illustrated Guide for Grading Eye Irritation by Hazardous Substances". A copy of the score and interpreting system is attached.

The individual scores are presented on the attached pages.

The mean scores are:

Hour 1	8.50
Day 1	0.33
Day 2	0
Day 3	0
Day 7	
Day 14	

CLASSIFICATION: Minimally Irritating.

Respectfully submitted,

Oscar M. Moreno

Oscar M. Moreno, Ph.D.
President

3/21/78

MB

Project No: MB 77-2432

Rabbit Eye Irritation Study
Individual Daily Scores

Material: Disperse Pink N Granules

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
1	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		1	0	0	0		
		2. Iris Total = C x 5		5	0	0	0		
	D	Conjunctiva	Redness	1	1	0	0		
	E		Chemosis	1	0	0	0		
	F		Discharge	2	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		8	2	0	0		
		Totals added = 1 + 2 + 3		13	2	0	0		
		UV Fluorescein scan			0		0		
2	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		0	0	0	0		
		2. Iris Total = C x 5							
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	0	0	0	0		
	F		Discharge	1	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		4	0	0	0		
		Totals added = 1 + 2 + 3		4	0	0	0		
		UV fluorescein scan			0		0		
3	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		0	0	0	0		
		2. Iris Total = C x 5							
	D	Conjunctiva	Redness	0	0	0	0		
	E		Chemosis	0	0	0	0		
	F		Discharge	0	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		0	0	0	0		
		Totals added = 1 + 2 + 3		0	0	0	0		
		UV fluorescein scan			0		0		

Project No: MB 77-2432

Rabbit Eye Irritation Study
Individual Daily Scores

Material: Disperse Pink N Granules

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
4	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		1	0	0	0		
		2. Iris Total = C x 5		5	0	0	0		
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	2	0	0	0		
	F		Discharge	0	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		6	0	0	0		
		Totals added = 1 + 2 + 3		11	0	0	0		
		UV Fluorescein scan			0		0		
5	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		0	0	0	0		
		2. Iris Total = C x 5							
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	2	0	0	0		
	F		Discharge	1	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		8	0	0	0		
		Totals added = 1 + 2 + 3		8	0	0	0		
		UV fluorescein scan			0		0		
6	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		1	0	0	0		
		2. Iris Total = C x 5		5	0	0	0		
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	2	0	0	0		
	F		Discharge	2	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		10	0	0	0		
		Totals added = 1 + 2 + 3		15	0	0	0		
		UV fluorescein scan			0		0		

SCALE OF SCORES FOR GRADING THE SEVERITY OF OCULAR LESIONS*

OCULAR TISSUE	DESCRIPTION	GRADING
CORNEA	A. OPACITY - Degree of Density - Area which is most dense is read	
	Scattered or diffuse area, details of iris clearly visible	1
	Easily descernible translucent areas, details of iris slightly obscured	2
	Opalescent areas, no details of iris visible, size of pupil barely discernible	3
	Opaque, iris invisible	4
	B. AREA OF CORNEA INVOLVED	
	One quarter or less but not zero	1
	Greater than one quarter but less than one half	2
	Greater than one half but less than three quarters	3
	Greater than three quarters, up to whole area	4
	SCORE: A x B x 5 Total Maximum = 80	
IRIS	A. VALUES	
	Folds above normal, congestion, swelling, circumcorneal injection (any or all or these or a combination of any thereof), iris still reacting to light (sluggish reaction is positive)	1
	No reaction to light, hemorrhage, gross destruction (any or all of these)	2
	SCORE: A x 5 Total Maximum = 10	
CONJUNCTIVA	A. REDNESS (refers to palpebral conjunctiva only excluding cornea and iris)	
	Vessels definitely injected above normal	1
	More diffuse, deeper crimson red, individual vessels not easily discernible	2
	Diffuse beefy red	3
	B. CHEMOSIS	
	Any swelling above normal (includes nictitating membrane)	1
	Obvious swelling with partial eversion of the lids	2
	Swelling with lids about half-closed	3
	Swelling with lids about half-closed to completely closed	4
	C. DISCHARGE	
	Any amount different from normal (does not include small amount observed in inner canthus of normal animals)	1
	Discharge with moistening of the lids and hairs just adjacent to the lids	2
	Discharge with moistening of the lids and hairs and considerable area around eye	3
	SCORE: (A + B + C) x 2 Total Maximum = 20	

*Draize, John H. Dermal Toxicity, "Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics", ASSOCIATION OF FOOD AND DRUG OFFICIALS OF THE U.S., 1959, pp 49-51

RATING OF TEST MATERIALS BASED ON EYE IRRITATION PROPERTIES*

RATING	RANGE	DEFINITION
Non-irritating	0 - 0.5	To maintain this rating all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Practically Non-irritating	Greater than 0.5 - 2.5	To maintain this rating, all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Minimally Irritating	Greater than 2.5 - 15.0	To maintain this rating, all scores at the 72 hour reading must be zero; otherwise, increase rating 1 level.
Mildly Irritating	Greater than 15.0 - 25.0	To maintain this rating, all scores at the 7 day reading must be zero; otherwise, increase rating 1 level.
Moderately Irritating	Greater than 25.0 - 50.0	To maintain this rating, scores at 7 days must be less than or equal to 10 for 60% or more of the animals. Also, mean 7 day score must be less than or equal to 20. If 7 day mean score is less than or equal to 20 but less than 60% of the animals show scores less than 10, then no animal among those showing scores greater than 10 can exceed a score of 30 if rating is to be maintained; otherwise, increase rating 1 level.
Severely Irritating	Greater than 50.0 - 80.0	To maintain this rating, scores at 7 days must be less than or equal to 30 for 60% or more of the animals. Also, mean 7 day scores must be less than or equal to 40. If 7 day mean score is less than or equal to 40 but less than 60% of the animals show scores less than or equal to 30, then no animal among those showing scores greater than 30 can exceed a score of 60 if rating is to be maintained; otherwise, increase rating 1 level.
Extremely Irritating	Greater than 80.0 -110.0	

*Kay, J.H., Calandra, J.C., J. Soc. Cos. Chem., 13:281 - 289, 1962.

SCALE OF SCORES FOR ULTRAVIOLET FLUORESCEIN SCAN

Reading	Grade
Negative	0
Positive with an area one quarter or less	1
Positive with an area greater than one quarter but less than one half	2
Positive with an area greater than one half but less than three quarters	3
Positive with an area greater than three quarters, up to whole area	4

MATERIAL SAFETY DATA SHEET

Required under OSHA's Hazard Communication Standard 29 CFR 1910-1200

IDENTITY (As Used on Label and List) T. S. Red 305 Cake (C.I. Disperse Red 60)

Section I

Manufacturer's Name: Sumitomo Chemical Co., Ltd.	Emergency Telephone Number
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for information: 06-220-3734 (Japan)
15, 5-Chome, Kitahama	Data Prepared: 5th January, 1987
Higashi-ku, Osaka 541, Japan	Signature of Preparer (optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%(Optional)
Health Hazards : C.I. Disperse Red 60				
Eye irritant				
Skin irritant				

Section III - Physical Characteristics

Boiling Point	Not applicable	Specific Gravity (H_2O = 1)	0.5
Vapor Pressure (mm Hg)	Not applicable	Melting Point	More than 180°C
Vapor Density (AIR = 1)	Not applicable	Evaporation Rate (Butyl Acetate = 1)	Not applicable

Solubility in Water: Negligible

Appearance and Odor: Reddish cake , Odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Not applicable	Flammable Limits: Not applicable	LEL	UEL

Extinguishing Media: Water, Carbon dioxide, Foam, Dry chemical

Special Fire Fighting Procedures

Firefighters should be provided with air-supplied respirator

Unusual Fire and Explosion Hazards

None

Section V – Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid): None

Hazardous Decomposition or Byproducts: Forms NO_x, CO when heated to burning

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI – Health Hazard Data

Route(s) of Entry: Inhalation? Skin? X Ingestion?

Health Hazards (Acute and Chronic)

Eye-irritant (rabbit) Skin-irritant (rabbit)

LD_{50} (oral-mouse) more than 5000 mg/kg

Carcinogenicity: NTP? None IARC Monographs? None OSHA Regulated? None

Signs and Symptoms of Exposure: In case of excess contact with eyes or skin without first aid, causes a reversible inflammatory effect on eyes or skin.

Medical Conditions Generally Aggravated by Exposure: Congestion of eyes
Erythema of skin

Emergency and First Aid Procedures: In case of contact with eyes or skin, immediately flush eyes or skin with plenty of water, in case of inhalation, remove to fresh air and in case of ingestion, immediately induce vomiting, and contact a physician.

Section VII – Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Sweep up and shovel into suitable containers and then wash out with water.

Waste Disposal Method: To be able to be incinerated by the adequate method.

Precautions to Be Taken in Handling and Storing

No problem when stored or handled at room temperature

Other Precautions: None known to Sumitomo Chemical

Section VIII – Control Measures

Respiratory Protection (Specify Type)
None required under normal handling, but use adequate ventilation in workroom.

Ventilation	Local Exhaust	Acceptable	Special	
	Mechanical (General)	Preferred	Other	

Protective Gloves: Rubber gloves Eye Protection: Safety goggles

Other Protective Clothing or Equipment: Eye bath, mask, coveralls

Work/Hygienic Practices: None known to Sumitomo Chemical

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 263-3400

BASF

SEP 2 2 1988

PRODUCT NUMBER: 232301 **PALANIL® Red BF-N 200%**

SECTION I

®Registered Trademark

TRADE NAME: PALANIL® Red BF-N 200%

CHEMICAL NAME: Anthraquinone Dye

SYNONYMS: None

FORMULA: C.I. Disperse Red 60

CHEMICAL FAMILY: Disperse Dyes

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PALANIL® Red BF-N 200% --Proprietary Proprietary Mixture Containing: C.I. Disperse Red 60 Dispersing Agents	N/A	100	2 mg/m3 BASF Wyandotte Corp. recommendation

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: 9.0-10.0 (5% Aqueous)
VAPOR PRESSURE mm Hg @20 C: N/A	
SPECIFIC GRAVITY OR BULK DENSITY: N/A	
SOLUBILITY IN WATER: Dispersible	Color: Dark Red

APPEARANCE: Fine Powder ODOR: Odorless INTENSITY: N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): N/A	AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog or media proper to primary cause of fire.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters should be equipped with self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Adequate ventilation and cleanup must be maintained to minimize dust accumulation. May form explosive dust-air mixture.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-263-3400

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
PALANIL* Red BF-N 200%	
Rat, Oral LD50	>5000 mg/kg.
Rabbit, Skin	Slightly irritating
Rabbit, Eyes	Slightly irritating

EFFECTS OF OVEREXPOSURE:

Contact with eyes and skin may result in irritation.
Ingestion may result in gastric disturbances.
Inhalation of dusts may irritate the respiratory tract.

FIRST AID PROCEDURES:

Eyes--Flush eyes with flowing water at least 15 minutes.
If irritation develops, consult a physician.
Skin--Wash affected skin areas thoroughly with soap and water.
If irritation develops, consult a physician.
Ingestion--If swallowed, dilute with water and induce vomiting.
Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Get immediate medical attention.
Inhalation--If inhaled, move to fresh air.
Aid in breathing, if necessary, and get medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	N/A
CHEMICAL INCOMPATIBILITY:	N/A
HAZARDOUS DECOMPOSITION PRODUCTS:	N/A
HAZARDOUS POLYMERIZATION:	Does not occur
CONDITIONS TO AVOID:	N/A
CORROSIVE TO METAL:	No
OXIDIZER:	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved dust respirator.

EYE PROTECTION: Goggles.

PROTECTIVE CLOTHING: Gloves, coveralls, apron, boots as necessary to minimize skin contact.

VENTILATION: Use local exhaust to maintain levels below P.E.L.

OTHER: Shower after handling. Clean clothing should be worn daily.

PRODUCT NUMBER: 232301 PALANIL® Red BF-N 200%

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

None available.

SPILL AND LEAK PROCEDURES:

PALANIL® Red BF-N 200% is not a RCRA-regulated product.
Spills should be contained and placed in suitable containers for disposal.

HAZARDOUS SUBSTANCE SUPERFUND: No **RQ (lbs):**

WASTE DISPOSAL METHOD:

Incinerate or bury as a solid in a licensed facility.
Do not discharge into waterways or sewer systems.

HAZARDOUS WASTE 40CFR261: No **HAZARDOUS WASTE NUMBER:**

CONTAINER DISPOSAL:

Dispose of in licensed facility.
Recommend crushing or other means to prevent unauthorized reuse.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
None	No
	REPORTABLE QUANTITY (RQ) None

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
None	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
None	None	None

BILL OF LADING DESCRIPTION
Dyes or Colors, Coal Tar, O/T Indigo

CC NO. 416	UN/NA CODE None

DATE PREPARED: 1 / 30 / 86 **UPDATED:** 1 / 30 / 86

SECTION X - PRODUCT LABEL

PALANIL* Red BF-N 200%

CAUTION:
EYE AND SKIN CONTACT MAY RESULT IN IRRITATION.
INGESTION MAY RESULT IN GASTRIC DISTURBANCES.
INHALATION OF DUSTS MAY RESULT IN RESPIRATORY IRRITATION.

Use with local exhaust. Wear an approved dust respirator, goggles, gloves, coveralls, apron, boots and other protective clothing as necessary to prevent contact.

FIRST AID:

Eyes - Immediately wash eyes with running water for 15 minutes. If irritation develops, get medical attention.

Skin - Wash affected areas with soap and water. Remove and launder contaminated clothing before reuse. If irritation develops, get medical attention.

Ingestion - If swallowed, dilute with water and immediately induce vomiting by sticking finger down victim's throat. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Get immediate medical attention.

Inhalation - Move to fresh air. Aid in breathing if necessary and get immediate medical attention.

IN CASE OF FIRE: Use water fog or media proper to primary cause of fire. Firefighters should be equipped with self-contained breathing apparatus and turnout gear.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents. 800-424-9300

ATTENTION: This product is sold solely for use by industrial institutions.

Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

Made in West Germany
Colors and Auxiliaries Group
0284

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

MATERIAL SAFETY DATA SHEET

DIVISION ADDRESS

MOBAY CHEMICAL CORPORATION
Dyes and Pigments Division
Mobay Road
Pittsburgh, PA 15205

ISSUE DATE August 11, 1986
SUPERSEDES August 1984

TRANSPORTATION EMERGENCY: CALL CHEMTREC
TELEPHONE NO: 800-424-9300; DISTRICT OF COLUMBIA: 202-483-7616

MOBAY NON-TRANSPORTATION EMERGENCY NO.:
(412) 923-1800

I. PRODUCT IDENTIFICATION

PRODUCT NAME.....: Resolin Red FB
PRODUCT CODE NUMBER..: 45301,12
CHEMICAL FAMILY.....: Anthraquinone
CI NAME.....: CI Disperse Red 60
T.S.C.A. STATUS.....: In compliance

II. HAZARDOUS INGREDIENTS

III. PHYSICAL DATA

APPEARANCE.....: Powder
COLOR.....: Purple
ODOR.....: Mild aromatic
SOLUBILITY IN WATER..: Miscible
pH.....: 8.0 - 9.0

IV. FIRE & EXPLOSION DATA

FLASH POINT.....: Not applicable
EXTINGUISHING MEDIA..: Water, dry chemical, CO_2, foam
SPECIAL FIRE FIGHTING PROCEDURES/UNUSUAL FIRE OR EXPLOSION HAZARDS:
Firefighters should be equipped with with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. Avoid dusting. Dust can form explosive mixtures with air.

V. HEALTH EFFECTS DATA

ANIMAL TOXICITY -
ORAL, LD50
(INGESTION).....: greater than 5,000 mg/kg - rats
FISH, LC50.....: greater than 10 mg/l - 48 h - Leuciscus idus (L)
EYE EFFECTS.....: slight irritant - rabbits
SKIN EFFECTS.....: non-irritant - rabbits
HUMAN EFFECTS
OF OVEREXPOSURE...: Because the complete acute and chronic hazards of this product have not been determined, employees should avoid exposure to it. Avoid contact with skin, eyes and clothing. Similar products have been shown to cause a temporary skin reaction (allergic contact dermatitis) in some people.

VI. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT.....:	Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of product remains (approximately 10-20 minutes). Get medical attention. Do not wear contact lenses while handling this product.
SKIN CONTACT.....:	Immediately wash skin with soap and plenty of water. If a temporary skin reaction (rash) occurs it should be treated as allergic contact dermatitis. Launder contaminated clothing before reuse.
INGESTION.....:	If this product has been swallowed, do not induce vomiting. Qualified medical personnel should remove the product by gastric levage and catharsis.

VII. EMPLOYEE PROTECTION RECOMMENDATIONS

EYE PROTECTION.....:	Employees should wear protective goggles.
SKIN PROTECTION....:	This material may be absorbed via the dermal route if prolonged or widespread skin contact occurs. Employees should avoid skin contact by wearing protective clothing. Long sleeve shirts, pants, rubber gloves, and rubber boots are recommended. Additional protection such as impervious suits are recommended when the potential for dermal contact is significant. Employees should wash their hands and face before eating and drinking, and shower thoroughly before leaving work.
RESPIRATORY PROTECTION.....:	Employees should avoid inhalation of dusts. Wherever potential for dusting exists an appropriate NIOSH approved respirator with dust filter should be worn.
VENTILATION.....:	Use local ventilation if dusting is a problem.
OTHER.....:	Emergency showers and eye wash stations should be available.

VIII. REACTIVITY DATA

STABILITY.....:	Stable
POLYMERIZATION.....:	Not applicable
INCOMPATIBILITY (MATERIALS TO AVOID).....:	Oxidizing and reducing agents.
HAZARDOUS DECOMPOSITION PRODUCTS.....:	CO, CO_2, oxides of nitrogen, sulfur, and potentially toxic fumes.

IX. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Spills should be swept up and placed in containers. Spill area can be washed with water; collect wash water for approved disposal.
WASTE DISPOSAL METHOD: Waste disposal should be in accordance with existing federal, state, and local environmental regulations.

X. SPECIAL PRECAUTIONS & STORAGE DATA

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in dry place, away from excessive heat, in original or similar waterproof containers. Reseal containers immediately after use. Avoid unnecessary contact.

XI. SHIPPING DATA

TECHNICAL SHIPPING NAME: Anthraquinone Dyestuff
D.O.T. HAZARD CLASSIFICATION.....: Non-regulated
D.O.T. LABELS REQUIRED.: None
FRT. CLASS BULK.....: Dyes
FRT. CLASS PKG.....: Coal Tar Dyes (NMFC 60000)
PRODUCT LABEL.....: O1A

XII. APPROVALS

REASON FOR ISSUE.....: Revision

DATE APPROVED.....: November 1985

APPROVED BY.....: J. Mostowy

TITLE.....: Senior Regulatory Compliance Specialist

MATERIAL SAFETY DATA SHEET

ICI Americas Inc.
Wilmington, Delaware 19897
Phone (302) 575-3000 (24 hours)

000469

RECEIVED
DEC 5 1985

Form No.: 4649h(A)
Date: 10/85

SECTION 1 NAME & HAZARD SUMMARY

Material name:
DISPERSOL® Red B-2B Grains or Powder (C.I. Disperse Red 60)

Hazard summary (as defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200):
Physical hazards: None
Health hazards: None

Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 2 INGREDIENTS

	%	TLV (ACGIH)
C.I. Disperse Red 60 (CAS 17418-58-5)		Not listed
Other nonhazardous ingredients		Not listed

Ingredients not precisely identified are proprietary or nonhazardous. All ingredients appear on the EPA TSCA Inventory. Values are not product specifications. gt = greater than, lt = less than, ca = approximately

SECTION 3 PHYSICAL DATA

Boiling point: Not applicable
Vapor pressure (mmHg at 20°C): No data
Vapor density (air = 1): No data
Solubility in water: Dispersible
pH: No data
Specific gravity: No data
% Volatile by volume: Negligible
Appearance and odor: Red odorless grains or powder

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point (and method): Not applicable
Autoignition temp.: No data
Flammable limits (STP): Not applicable

Extinguishing media:
Not applicable. Use media suitable for surrounding fire.

Special fire fighting protective equipment:
Self-contained breathing apparatus with full facepiece and protective clothing if involved in a fire of other materials.

Unusual fire and explosion hazards:
This product may form explosive dust clouds in air.

SECTION 5 REACTIVITY DATA

Stability:
Stable under normal conditions.

SECTION 5 REACTIVITY DATA (continued)

Incompatibility (materials to avoid):
Oxidizing agents

Hazardous decomposition products:
Combustion products: Carbon dioxide, carbon monoxide, nitrogen oxides, ammonia, sulfur oxides.

Hazardous polymerization:
Will not occur.

SECTION 6 HEALTH HAZARD ASSESSMENT

General:
Limited toxicity data are available on this specific product; this health hazard assessment is based on the results of screening tests.

Ingestion:
The acute oral LD_{50} in rat is above 5 g/kg. Relative to other materials, a single dose of this product is practically nontoxic by ingestion. Hodge, H.C. and Sterner, J.H., American Industrial Hygiene Association Quarterly, 10:4, 93, Dec. 1949.

Eye contact:
This material is nonirritating in rabbit eye studies; no irritation is likely to occur after human eye contact.

Skin contact:
This material is mildly irritating in rabbit dermal irritation studies, but no irritation is expected to develop after contact with human skin.

Skin absorption:
This product will probably not be absorbed through human skin.

Inhalation:
No toxic effects are known to to be associated with inhalation of dust from this material.

Other effects of overexposure:
No other adverse clinical effects are known to be associated with exposures to this material.

First aid procedures:
Skin: Wash material off the skin with copious amounts of soap and water. If redness, itching or a burning sensation develops, get medical attention.
Eyes: Immediately flush with copious amounts of water for at least 15 minutes. If redness, itching or a burning sensation develops, have eyes examined and treated by medical personnel.
---continued---

SECTION 6 HEALTH HAZARD ASSESSMENT (continued)

First aid procedures (continued):

Ingestion: Give one or two glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. (Never give anything by mouth to an unconscious person.)

Inhalation: Remove victim to fresh air. If cough or other respiratory symptoms develop, consult medical personnel.

SECTION 7 SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:

Sweep up and recover or mix material with moist absorbent and shovel into waste container. Wash down spill area with water and flush to a sewer serviced by a wastewater treatment facility. Use care to minimize the amount of dyestuff that reaches the sewer.

Disposal method:

Discarded product is not a hazardous waste under RCRA, 40 CFR 261.

Container disposal:

Puncture or otherwise destroy empty container before disposal.

SECTION 8 SPECIAL PROTECTION INFORMATION

TLV® or suggested control value:

No TLV assigned. Minimize exposure in accordance with good hygiene practice.

Ventilation:

Use local exhaust to keep exposures to a minimum.

Respiratory protection (specify type):

If needed, use MSHA-NIOSH approved respirator for dusts, mists and fumes whose TLV is greater than 0.05 mg/m^3.

Protective clothing:

Gloves, apron and arm covers to avoid skin contact (see Section 9).

Eye protection:

Safety glasses with side shields.

Other protective equipment:

Eyewash station in work area.

SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS

Precautions to be taken in handling or storing:

Follow procedures specified in the National Fire Protection Association Codes and Standards for handling explosive dusts. Maintain good housekeeping to avoid dust buildup. Avoid skin contact; stains may be difficult to remove without injuring the skin.

ANTHRAQUINONE DYES AND RELATED CHEMICALS: REVIEW AND ASSESSMENT OF POTENTIAL ENVIRONMENTAL AND HEALTH ASPECTS

FINAL REPORT

prepared for

Dyes Environmental and Toxicology Organization, Inc.
Scarsdale, New York

by

Caroline C. Sigman, C. Tucker Helmes,
Patricia A. Papa, David L. Atkinson,
Mary K. Doeltz, and Ann Winship-Ball

SRI International, Menlo Park, California

May 1982

Revised January 1983

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ACID BLUE 40

C.I. 62125

CAS 6424-85-7

M B Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

TEST FOR EYE IRRITATION IN RABBITS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 D

Test started : 5/20/80
Test ended : 6/03/80

Objective : To identify ocular irritation potential

MATERIALS

Sample label : #1207-00 Mix 1 TTS, Conc. 200% Alizarine Blue 2GA

Sample received : 5/05/80

Description : Purple Powder

ANIMALS

Supplier(s) : Ace Animals, Nicholas Helf

Sex : 6 Female

New Zealand White rabbits, approximately 8 weeks old when received, were equilibrated for at least one week in this laboratory. Twenty-four hours pretest, the cornea of each animal was examined with fluorescein and cobalt blue light. Six apparently healthy rabbits, free from evidence of ocular irritation or damage, were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each animal was identified by a uniquely numbered eartag.

The animals were housed 1/cage in suspended wire mesh cages. Any extraneous material which might produce eye irritation was excluded from the area. Fresh Purina rabbit chow and water were freely available. The animal room, reserved exclusively for rabbits on acute tests, was maintained at 20 - 21°C and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Treatment - The test material (0.1 ml or 0.1 g) was placed once into the conjunctival sac of one eye of each of six rabbits. The lids were held together briefly to insure adequate distribution of the test material. The untreated eye of each rabbit served as a control.

Observations - The general health of the rabbits was monitored during the observation period. The ocular reactions of the cornea, iris and conjunctiva were graded at 1 hour and at 1, 2, and 3 days after dosing. If any score was

Project #: MB 80-4646 D
Sample #: 1207-00

noted on Day 3, the eyes were read again on Day 7. If any score was noted on Day 7, the eyes were read again on Day 14. Fluorescein and cobalt blue light were used in scoring ocular reactions on Days 1 and 3 and on Days 7 and 14, if necessary. Ocular reactions were graded as described by Draize, J.H. et al., J. Pharm. Exp. Ther. 82:377-390, 1944. The scores were interpreted by the method of Kay, J.H. Calandra, J.C. J. Soc. Cos. Chem., 13:281-289, 1962.

RESULTS

MEAN SCORES:

HOUR	DAYS				
1	1	2	3	7	14
16.33	39.7	33.33	32.66	7.66	2.66

CONCLUSION

The test article is moderately irritat

SUMMARY OF DATA

Corneal opacity was present in 4/6 eyes. In one animal, it persisted to Day 14.

Iritis, noted in all eyes, was cleared by Day 7.

Mild to moderate conjunctival irritation, noted in all animals, was generally clear by Day 14.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the study, raw data and final report on the following dates;

June 3, 1980
June 4, 1980
June 25, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 6/30/80
Oscar M. Moreno, Ph.D.
Susan E. Weatherby 27 June 80
Susan E. Weatherby, Study Director
Elizabeth L. Altenbach 7-1-80
Elizabeth L. Altenbach, Archivist
Submitted: 7/01/80

212/2

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

TEST FOR EYE IRRITATION IN RABBITS

Project #: MB 80-4646 D

Sample #: 1207-00

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
5877	A	Cornea	Opacity	0[c]	4[c]	3	3	2	2
	B		Area	0	4	4	4	1	1
		1. Cornea Total = (AxB) x 5		0	80	60	60	10	10
	C	Iris		0	?	1	1	0	0
		2. Iris Total = C x 5		0		5	5	0	0
	D	Conjunctiva	Redness	2[a]	1[ad]	1	1	1	1
	E		Chemosis	2	2	2	2	2	1
	F		Discharge	2[b]	3[b]	2[b]	2[b]	1[b]	1[b]
		3. Conjunctiva Total = (D+E+F) x 2		12	12	10	10	8	6
		Totals added = 1 + 2 + 3		12	92	75	75	18	16
		UV Fluorescein scan			3		3	1	1
5878	A	Cornea	Opacity	0[c]	0	0	0	0	0
	B		Area	0	0	0	0	0	0
		1. Cornea Total = (AxB) x 5		0	0	0	0	0	0
	C	Iris		1	0	0	0	0	0
		2. Iris Total = C x 5		5	0	0	0	0	0
	D	Conjunctiva	Redness	2[a]	1	1	1	1	0
	E		Chemosis	2	2	1	1	0	0
	F		Discharge	2[b]	2[b]	2[b]	1[b]	0[b]	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		12	10	8	6	2	0
		Totals added = 1 + 2 + 3		17	10	8	6	2	0
		UV fluorescein scan			2		2	0	0
5887	A	Cornea	Opacity	0	0	2	2	0	0
	B		Area	0	0	1	1	0	0
		1. Cornea Total = (AxB) x 5		0	0	10	10	0	0
	C	Iris		0	1	1	1	0	0
		2. Iris Total = C x 5		0	5	5	5	0	0
	D	Conjunctiva	Redness	2[a]	2	2	2	1	0
	E		Chemosis	3	2	2	2	0	0
	F		Discharge	3[b]	2[b]	2[b]	2[b]	1	0[b]
		3. Conjunctiva Total = (D+E+F) x 2		16	12	12	12	4	0
		Totals added = 1 + 2 + 3		16	17	27	27	4	0
		UV fluorescein scan			3	2		0	0

a = conjunctiva stained purple by material
b = area at eye stained purple by material
c = cornea stained purple by material
d = material in eye

? = unable to determine

TEST FOR EYE IRRITATION IN RABBITS

Project #: MB 80-4646 D

Sample #: 1207-00

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
5888	A	Cornea	Opacity	0[c]	0	0	0	0	0
	B		Area	0	0	0	0	0	0
		1. Cornea Total = (AxB) x 5		0	0	0	0	0	0
	C	Iris		1	1	0	0	0	0
		2. Iris Total = C x 5		5	5	0	0	0	0
	D	Conjunctiva	Redness	2[a]	2	2	2	1	0
	E		Chemosis	3[b]	3[b]	2[b]	1[b]	0[b]	0[b]
	F		Discharge	2	3	1	1	0	0
		3. Conjunctiva Total = (D+E+F) x 2		14	16	10	8	2	0
		Totals added = 1 + 2 + 3		19	21	10	8	2	0
		UV Fluorescein scan			2		1	0	0
5881	A	Cornea	Opacity	0	3[c]	4	4	2	0
	B		Area	0	2	1	1	1	0
		1. Cornea Total = (AxB) x 5		0	30	20	20	10	0
	C	Iris		1	1	1	1	0	0
		2. Iris Total = C x 5		5	5	5	5	0	0
	D	Conjunctiva	Redness	2[a]	2[ad]	1	1	1	0
	E		Chemosis	2[b]	3[b]	2[b]	2[b]	0[b]	0[b]
	F		Discharge	2	3	2	2	1	0
		3. Conjunctiva Total = (D+E+F) x 2		12	16	10	10	4	0
		Totals added = 1 + 2 + 3		17	51	35	35	14	0
		UV fluorescein scan			2		2	1	0
5883	A	Cornea	Opacity	0[c]	2	3	3	0	0
	B		Area	0	3	2	2	0	0
		1. Cornea Total = (AxB) x 5		0	30	30	30	0	0
	C	Iris		1	1	1	1	0	0
		2. Iris Total = C x 5		5	5	5	5	0	0
	D	Conjunctiva	Redness	2[a]	2[a]	2	2	1	0
	E		Chemosis	2[b]	2[b]	2[b]	2[b]	1[b]	0[b]
	F		Discharge	2	2	1	1	1	0
		3. Conjunctiva Total = (D+E+F) x 2		12	12	10	10	6	0
		Totals added = 1 + 2 + 3		17	47	45	45	6	0
		UV fluorescein scan			4		3	0	0

a = conjunctiva stained purple by material
b = area at eye stained purple by material
c = cornea stained purple by material
d = material in eye

SCALE OF SCORES FOR GRADING THE SEVERITY OF OCULAR LESIONS*

OCULAR TISSUE	DESCRIPTION	GRADING
CORNEA	A. OPACITY - Degree of Density - Area which is most dense is read	
	Scattered or diffuse area, details of iris clearly visible	1
	Easily descernible translucent areas, details of iris slightly obscured	2
	Opalescent areas, no details of iris visible, size of pupil barely discernible	3
	Opaque, iris invisible	4
	B. AREA OF CORNEA INVOLVED	
	One quarter or less but not zero	1
	Greater than one quarter but less than one half	2
	Greater than one half but less than three quarters	3
	Greater than three quarters, up to whole area	4
	SCORE: A x B x 5 Total Maximum = 80	
IRIS	A. VALUES	
	Folds above normal, congestion, swelling, circumcorneal injection (any or all or these or a combination of any thereof), iris still reacting to light (sluggish reaction is positive)	1
	No reaction to light, hemorrhage, gross destruction (any or all of these)	2
	SCORE: A x 5 Total Maximum = 10	
CONJUNCTIVA	A. REDNESS (refers to palpebral conjunctiva only excluding cornea and iris)	
	Vessels definitely injected above normal	1
	More diffuse, deeper crimson red, individual vessels not easily discernible	2
	Diffuse beefy red	3
	B. CHEMOSIS	
	Any swelling above normal (includes nictitating membrane)	1
	Obvious swelling with partial eversion of the lids	2
	Swelling with lids about half-closed	3
	Swelling with lids about half losed to completely closed	4
	C. DISCHARGE	
	Any amount different from normal (does not include small amount observed in inner canthus of normal animals)	1
	Discharge with moistening of the lids and hairs just adjacent to the lids	2
	Discharge with moistening of the lids and hairs and considerable area around eye	3
	SCORE: (A + B + C) x 2 Total Maximum = 20	

*Draize, John H. Dermal Toxicity, "Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics". ASSOCIATION OF FOOD AND DRUG OFFICIALS OF THE U.S., 1959, pp 49-51

RATING OF TEST MATERIALS BASED ON EYE IRRITATION PROPERTIES*

RATING	RANGE	DEFINITION
Non-irritating	0 - 0.5	To maintain this rating all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Practically Non-irritating	Greater than 0.5 - 2.5	To maintain this rating, all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Minimally Irritating	Greater than 2.5 - 15.0	To maintain this rating, all scores at the 72 hour reading must be zero; otherwise, increase rating 1 level.
Mildly Irritating	Greater than 15.0 - 25.0	To maintain this rating, all scores at the 7 day reading must be zero; otherwise, increase rating 1 level.
Moderately Irritating	Greater than 25.0 - 50.0	To maintain this rating, scores at 7 days must be less than or equal to 10 for 60% or more of the animals. Also, mean 7 day score must be less than or equal to 20. If 7 day mean score is less than or equal to 20 but less than 60% of the animals show scores less than 10, then no animal among those showing scores greater than 10 can exceed a score of 30 if rating is to be maintained; otherwise, increase rating 1 level.
Severely Irritating	Greater than 50.0 - 80.0	To maintain this rating, scores at 7 days must be less than or equal to 30 for 60% or more of the animals. Also, mean 7 day scores must be less than or equal to 40. If 7 day mean score is less than or equal to 40 but less than 60% of the animals show scores less than or equal to 30, then no animal among those showing scores greater than 30 can exceed a score of 60 if rating is to be maintained; otherwise, increase rating 1 level.
Extremely Irritating	Greater than 80.0 -110.0	

*Kay, J.H., Calandra, J.C., J. Soc. Cos. Chem., 13:281 - 289, 1962.

SCALE OF SCORES FOR ULTRAVIOLET FLUORESCEIN SCAN

Reading	Grade
Negative	0
Positive with an area one quarter or less	1
Positive with an area greater than one quarter but less than one half	2
Positive with an area greater than one half but less than three quarters	3
Positive with an area greater than three quarters, up to whole area	4

ACID BLUE 40

C.I. 62125

CAS 6424-85-7

M B Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

TEST FOR PRIMARY DERMAL IRRITATION IN RABBITS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 C

Test started : 5/20/80
Test ended : 5/23/80

Objective : To identify dermal irritation potential as defined in 16 CFR 1500.3

MATERIALS

Sample label : #1207-00 Mix #1 TTS, Conc.200% Alizarine Blue 2GA

Sample received : 5/05/80

Description : Purple Powder - used as 50% m/v mixture in distilled water

ANIMALS

Supplier(s) : Ace Animals, Perfection Breeders

Sex : 6 Males

New Zealand White rabbits, approximately 8 weeks old when received, were equilibrated for at least one week in this laboratory. Six apparently healthy rabbits were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each animal was identified by a uniquely numbered metal eartag.

The animals were housed 1/cage in suspended wire mesh cages. Fresh Purina rabbit chow and water were freely available. The animal room, reserved exclusively for rabbits on acute tests, was maintained at 20 - 21°C and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Site Preparation - The fur was clipped from the back and sides of the animals. The back to the left of the spinal column of all animals was abraded. The abrasions, extending the length of the exposure site, scratched the stratum corneum but did not reach the derma or produce bleeding. The back to the right of the spinal column remained intact.

Treatment - Six rabbits were dosed once dermally at one abraded and one intact site/animal. 0.5 g (if the material was solid) or 0.5 ml (if the material was liquid) was applied to each site beneath 2.5 cm square gauze patches. The patches were secured with adhesive tape and the trunks were wrapped with impervious material. The test material was kept in contact with the skin for 24 hours, at which time the wrappings were removed.

Observations and Calculations - Dermal reactions were scored at 24 and 72 hours by the Draize scoring system (attached). The primary irritation index was calculated as cited in 16 CFR 1500.41.

Project #: MB 80-4646 C
Sample #: 1207-00

RESULTS

PRIMARY DERMAL INDEX: 0.17

CONCLUSION

The test material is minimally irritating.

SUMMARY OF DATA

Slight edema was noted in 3/6 animals at 24 hours.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the raw data and final report on the following dates:

May 27, 1980
June 25, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 6/25/80
Oscar M. Moreno, Ph.D.
Susan E. Weatherby 27 June 80
Susan E. Weatherby, Study Director
Elizabeth J. Altenbach
Elizabeth J. Altenbach, Archivist
Submitted: 7/01/80

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

Project #: MB 80-4646 C
Code #: 1207-00

INDIVIDUAL SCORES

	RABBIT EARTAG NUMBER						Mea Sco
	5546	5635	5636	5803	5576	5673	
Erythema & Eschar Formation							
Intact skin - 24 hours	0	0	0	0	0	0	0
Intact skin - 72 hours	0	0	0	0	0	0	0
Abraded skin - 24 hours	0	0	0	0	0	0	0
Abraded skin - 72 hours	0	0	0	0	0	0	0
Edema							
Intact skin - 24 hours	0	1	0	0	0	0	0
Intact skin - 72 hours	0	0	0	0	0	0	0
Abraded skin - 24 hours	0	1	0	1	1	0	0
Abraded skin - 72 hours	0	0	0	0	0	0	0

Sum of Mean Scores = 0

Primary Dermal Index = Sum of Mean Scores/4 0

Evaluation of Skin Reactions

	Value
Erythema & Eschar Formation:	
No erythema	0
Very slight erythema (barely perceptible)	1
Well defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4
Edema Formation:	
No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well defined by definite raising)	2
Moderate edema (raised approximately 1 millimeter)	3
Severe edema (raised more than 1 millimeter and extending beyond the area of exposure)	4

The mean values (6 rabbits) for erythema/eschar and edema formation on intact and abraded skin at 24 and 72 hours (a total of 8 values) are added and divided by 4 to give the Primary Irritation score.

The conclusion was derived from the Primary Irritation Index as interpreted by the following table:

PRIMARY IRRITATION INDEX	CONCLUSION
0	Non-Irritating
0.1 - 0.5	Minimally Irritating
0.6 - 1.5	Slightly Irritating
1.6 - 3.0	Mildly Irritating
3.1 - 5.0	Moderately Irritating
5.1 - 6.5	Severely Irritating
6.6 - 8.0	Extremely Irritating

ACID BLUE 40

C.I. 62125

CAS 6424-85-7

M B Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

TEST FOR ACUTE DERMAL TOXICITY IN RABBITS

FOR: TOMS RIVER CHEMICAL CORPORATION

Project number: MB 80-4646 B

Objective : To determine dermal toxicity

Test started : 5/22/80
Test ended : 6/06/80

MATERIALS

Sample label : #1207-00 Mix 1TTS, Conc. 200% Alizarine Blue 2GA

Sample received: 5/05/80

Description : Purple Powder - used as 50% m/v mixture in distilled water

ANIMALS

Supplier(s) : Perfection Breeders

Weight range : 2.0 - 2.5 kg
Sex : 2 Male - 2 Femal

New Zealand White rabbits, at least 8 weeks old when received, were equilibrated for at least one week in this laboratory. Two male and two female apparently healthy rabbits, were selected for the test.

The animals were identified by cage tags noting the test material, starting date, animal number and sex. In addition, each animal was identified with a uniquely numbered metal eartag.

The animals were housed 1/cage in suspended wire mesh cages (30" x 18" x 18"). Fresh Purina rabbit chow and water were freely available. The animal room, reserved exclusively for rabbits on acute tests, was maintained at 20 - 21°C and was kept clean in accordance with the standards of AAALAC of which this laboratory is an approved member.

METHODS

Site Preparation - 24 hours prior to dosing, the fur was clipped from the backs of the animals. The clipped area was 200 square cm, approximately 10% of the body surface. Just prior to dosing, abrasions were made in one half of the rabbits. The abrasions, extending the length of the exposure site, scratched the stratum corneum but did not reach the derma or produce bleeding.

Treatment - Two male and two female rabbits were dosed at 2.0 g/kg. For liquid materials the dose was based on the sample weight as calculated from the specific gravity. The test material was applied once dermally to the prepared site under gauze patches. The patches were secured with adhesive tape and the trunks were wrapped with impervious material. The test material was kept in contact with the skin for 24 hours, at which time the wrappings were removed. An estimate of the amount of material remaining was recorded. The exposure site was washed with warm tap water to remove excess material.

Observations - Dermal reactions were scored at 25 hours, 7 and 14 days by the

Project #: MB 80-0646 B
Sample #: 1207-00

Draize scoring system (attached). The rabbits were observed daily for 14 days for signs of toxicity, pharmacological effects and mortality. Body weights were recorded pretest and in the survivors at 7 and 14 days.

Termination - At 14 days, the survivors were sacrificed. All animals were examined for gross pathology.

RESULTS

LD 50: Greater than 2.0 g/kg of body weight

MORTALITY : 1/2 Male, Animal #5901 Day 2, 0/2 Female

INDIVIDUAL BODY WEIGHTS AND SKIN GRADES:

EARTAG #	DOSE VOLUME cc	WEIGHTS - kg 0	7	14	% REM.	Redness 25h	7	14	Edema 25h	7	14
5901-M	8.0	2.0			90	0			0		
5903-M	10.0	2.5	2.6	3.0	90	1	1	0	0	0	0
5924-F	8.4	2.1	2.1	2.1	90	1	1	0	0	0	0
5928-F	9.2	2.3	2.5	2.5	90	0	1	1	0	0	0

ab = abraded
% Rem. = the amount of material remaining on the skin, gauze and occlusive binding at 24 hours, after the occlusive binding was removed.

Evaluation of Skin Reactions

Erythema & Eschar Formation:

No erythema	0
Very slight erythema (barely perceptible)	1
Well defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4

Edema Formation:

No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well defined by definite raising)	2
Moderate edema (raised approximately 1 millimeter)	3
Severe edema (raised more than 1 millimeter and extending beyond the area of exposure)	4

TEST FOR ACUTE DERMAL TOXICITY IN RABBITS

Project #: MR 80-4646 B

Sample #: 1207-00

TOXIC SIGNS

@ 2.0 g/kg An.# & Sex	HOUR 0	DAY 1	2	3	4	5	6	7	8	9	10	11	12	13	14
5901 M		D	Z												
5903 M								X	W	DW	D	DW	DW	DVW	DV
5924 F										X					
5928 F															

AT ALL TIMES NOT MENTIONED, ANIMALS APPEARED NORMAL

D = diarrhea
V = abdomen bloated
W = emaciation
X = few feces
Z = dead

NECROPSY OBSERVATIONS:	5901 D	5903 S	5924 S	5928 S
Normal		X	X	
Lung(s): congestion	1			
Body wasted	1			
Treated skin scaly				1

D = dead
S = sacrificed
1 = scattered or slight

Project #: MB 80-4646
Sample #: 1207-00

CONCLUSION

The test article is not toxic, as defined in 16 CFR 1500.3.

SUMMARY OF DATA

One male animal died from a dermal dose of Alizarine Blue 2GA at 2.0 g/kg on Day 2.

Diarrhea was the only predeath toxic sign. The surviving animals were generally normal

Slight erythema was noted throughout the study. Edema was not present.

Body weights and necropsy findings of survivors were generally normal. Congested lungs and wasting of the body were noted in the spontaneous death.

QUALITY ASSURANCE EVALUATION

The quality assurance unit reviewed various aspects of the study, raw data and final report on the following dates;

May 23, 1980
June 9, 1980
June 24, 1980

Jon S. Harwick 7-2-80
Jon S. Harwick
Quality Assurance

Respectfully submitted,
Oscar M. Moreno 7/2/80
Oscar M. Moreno, Ph.D.
Daniel R. Cerven 2 July 80
Daniel R. Cerven, Study Director
Elizabeth A. Altenbach 7-1-80
Elizabeth A. Altenbach, Archivist
Submitted: 7/01/80

The raw data is filed at MB Research by project number.
The final report is filed by sponsor name and project number.

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

MATERIAL SAFETY DATA SHEET

Required under OSHA's Hazard Communication Standard 29 CFR 1910-1200

IDENTITY (As Used on Label and List) T. S. Red 305 Cake (C.I. Disperse Red 60)

Section I

Manufacturer's Name: Sumitomo Chemical Co., Ltd.	Emergency Telephone Number
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for information: 06-220-3734 (Japan)
15, 5-Chome, Kitahama	Date Prepared: 5th January, 1987
Higashi-ku, Osaka 541, Japan	Signature of Preparer (optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%(Optional)

Health Hazards : C.I. Disperse Red 60

Eye irritant

Skin irritant

Section III - Physical Characteristics

Boiling Point	Not applicable	Specific Gravity (H_2O = 1)	0.5
Vapor Pressure (mm Hg)	Not applicable	Melting Point	More than 180°C
Vapor Density (AIR = 1)	Not applicable	Evaporation Rate (Butyl Acetate = 1)	Not applicable

Solubility in Water: Negligible

Appearance and Odor: Reddish cake , Odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Not applicable	Flammable Limits: Not applicable	LEL	UEL

Extinguishing Media: Water, Carbon dioxide, Foam, Dry chemical

Special Fire Fighting Procedures

Firefighters should be provided with air-supplied respirator

Unusual Fire and Explosion Hazards

None

Section I – Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid): None

Hazardous Decomposition or Byproducts: Forms NO_x, CO when heated to burning

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section II – Health Hazard Data

Route(s) of Entry: Inhalation? | Skin? X | Ingestion?

Health Hazards (Acute and Chronic)

Eye-irritant (rabbit) Skin-irritant (rabbit)

LD_{50} (oral-mouse) more than 5000 mg/kg

Carcinogenicity: NTP? None | IARC Monographs? None | OSHA Regulated? None

Signs and Symptoms of Exposure: In case of excess contact with eyes or skin without first aid, causes a reversible inflammatory effect on eyes or skin.

Medical Conditions Generally Aggravated by Exposure: Congestion of eyes
Erythema of skin

Emergency and First Aid Procedures: In case of contact with eyes or skin, immediately flush eyes or skin with plenty of water, in case of inhalation, remove to fresh air and in case of ingestion, immediately induce vomiting, and contact a physician.

Section III – Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Sweep up and shovel into suitable containers and then wash out with water.

Waste Disposal Method: To be able to be incinerated by the adequate method.

Precautions to Be Taken in Handling and Storing

No problem when stored or handled at room temperature

Other Precautions: None known to Sumitomo Chemical

Section IV – Control Measures

Respiratory Protection (Specify Type)
None required under normal handling, but use adequate ventilation in workroom.

Ventilation	Local Exhaust	Acceptable	Special	
	Mechanical (General)	Preferred	Other	

Protective Gloves: Rubber gloves | Eye Protection: Safety goggles

Other Protective Clothing or Equipment: Eye bath, mask, coveralls

Work/Hygienic Practices: None known to Sumitomo Chemical

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

MB Research Laboratories, Inc.

steinsburg and wentz roads
post office box 203
spinnerstown, pennsylvania 18968
215-536-4110

REPORT ON RABBIT EYE IRRITATION

For: Toms River Chemical Corporation

Project number MB 77- 2432
Sample Disperse Pink N Granules
Mix # 69
Concentration : 100% CODE NO: 4080-40
TR # 77-1012

Material received: 12/21/77
Test started: 1/17/78
Test ended: 1/20/78
Description: Red Powder

This study was designed to determine ocular irritation potential of a material when instilled in the rabbit eye.

Six New Zealand White rabbits weighing approximately 2.5 kg were housed individually in suspended wire mesh cages in temperature and light controlled rooms. Purina rabbit chow and water were available ad libitum.

The rabbits were equilibrated in this laboratory for at least seven days. Rabbits with irritated or damaged eyes were not used in this test.

The test material (0.1 ml liquid or 0.1 ml-equivalent solid) was instilled in the lower conjunctival sac of one eye of each rabbit and the lids held closed for approximately one second to insure even distribution of the test material over all surfaces of the eye. The other eye served as an untreated control.

The eyes were examined and graded for irritation and corneal damage at 1, 24, 48 and 72 hours after instillation with a hand slit lamp. Eyes not returning to a score of zero by 72 hours were graded on the seventh day after instillation. Eyes still not returning to a score of zero were graded on the fourteenth day after instillation. All eyes were examined by applying 1 drop of 1% fluorescein sodium ophthalmic solution, U.S.P., to the cornea pre-test, 24, 72 hours and 7 and 14 days after instillation.

The ocular reactions were graded and interpreted as described in "Appraisal of the Safety of Food, Drugs, and Cosmetics", Association of Food and Drug Officials of the United States, 1959 with the assistance of the "Illustrated Guide for Grading Eye Irritation by Hazardous Substances". A copy of the score and interpreting system is attached.

The individual scores are presented on the attached pages.

The mean scores are:

Hour 1	8.50
Day 1	0.33
Day 2	0
Day 3	0
Day 7	
Day 14	

CLASSIFICATION: Minimally Irritating.

Respectfully submitted,

Oscar M. Moreno

Oscar M. Moreno, Ph.D.
President
3/21/78

MB

Project No: MB 77-2432

Rabbit Eye Irritation Study
Individual Daily Scores

Material: Disperse Pink N Granules

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
1	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		1	0	0	0		
		2. Iris Total = C x 5		5	0	0	0		
	D	Conjunctiva	Redness	1	1	0	0		
	E		Chemosis	1	0	0	0		
	F		Discharge	2	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		8	2	0	0		
		Totals added = 1 + 2 + 3		13	2	0	0		
		UV Fluorescein scan			0		0		
2	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		0	0	0	0		
		2. Iris Total = C x 5							
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	0	0	0	0		
	F		Discharge	1	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		4	0	0	0		
		Totals added = 1 + 2 + 3		4	0	0	0		
		UV fluorescein scan			0		0		
3	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		0	0	0	0		
		2. Iris Total = C x 5							
	D	Conjunctiva	Redness	0	0	0	0		
	E		Chemosis	0	0	0	0		
	F		Discharge	0	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		0	0	0	0		
		Totals added = 1 + 2 + 3		0	0	0	0		
		UV fluorescein scan			0		0		

Project No: MB 77-2432

Rabbit Eye Irritation Study
Individual Daily Scores

Material: Disperse Pink N Granules

An.No.	Item	Tissue	Reading	Hour 1	Day 1	2	3	7	14
4	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		1	0	0	0		
		2. Iris Total = C x 5		5	0	0	0		
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	2	0	0	0		
	F		Discharge	0	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		6	0	0	0		
		Totals added = 1 + 2 + 3		11	0	0	0		
		UV Fluorescein scan			0		0		
5	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		0	0	0	0		
		2. Iris Total = C x 5							
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	2	0	0	0		
	F		Discharge	1	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		8	0	0	0		
		Totals added = 1 + 2 + 3		8	0	0	0		
		UV fluorescein scan			0		0		
6	A	Cornea	Opacity	0	0	0	0		
	B		Area						
		1. Cornea Total = (AxB) x 5							
	C	Iris		1	0	0	0		
		2. Iris Total = C x 5		5	0	0	0		
	D	Conjunctiva	Redness	1	0	0	0		
	E		Chemosis	2	0	0	0		
	F		Discharge	2	0	0	0		
		3. Conjunctiva Total = (D+E+F) x 2		10	0	0	0		
		Totals added = 1 + 2 + 3		15	0	0	0		
		UV fluorescein scan			0		0		

SCALE OF SCORES FOR GRADING THE SEVERITY OF OCULAR LESIONS*

OCULAR TISSUE	DESCRIPTION	GRADING
CORNEA	A. OPACITY - Degree of Density - Area which is most dense is read	
	Scattered or diffuse area, details of iris clearly visible	1
	Easily descernible translucent areas, details of iris slightly obscured	2
	Opalescent areas, no details of iris visible, size of pupil barely discernible	3
	Opaque, iris invisible	4
	B. AREA OF CORNEA INVOLVED	
	One quarter or less but not zero	1
	Greater than one quarter but less than one half	2
	Greater than one half but less than three quarters	3
	Greater than three quarters, up to whole area	4
	SCORE: A x B x 5 Total Maximum = 80	
IRIS	A. VALUES	
	Folds above normal, congestion, swelling, circumcorneal injection (any or all or these or a combination of any thereof), iris still reacting to light (sluggish reaction is positive)	1
	No reaction to light, hemorrhage, gross destruction (any or all of these)	2
	SCORE: A x 5 Total Maximum = 10	
CONJUNCTIVA	A. REDNESS (refers to palpebral conjunctiva only excluding cornea and iris)	
	Vessels definitely injected above normal	1
	More diffuse, deeper crimson red, individual vessels not easily discernible	2
	Diffuse beefy red	3
	B. CHEMOSIS	
	Any swelling above normal (includes nictitating membrane)	1
	Obvious swelling with partial eversion of the lids	2
	Swelling with lids about half-closed	3
	Swelling with lids about half-closed to completely closed	4
	C. DISCHARGE	
	Any amount different from normal (does not include small amount observed in inner canthus of normal animals)	1
	Discharge with moistening of the lids and hairs just adjacent to the lids	2
	Discharge with moistening of the lids and hairs and considerable area around eye	3
	SCORE: (A + B + C) x 2 Total Maximum = 20	

*Draize, John H. Dermal Toxicity, "Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics", ASSOCIATION OF FOOD AND DRUG OFFICIALS OF THE U.S., 1959, pp 49-51

RATING OF TEST MATERIALS BASED ON EYE IRRITATION PROPERTIES*

RATING	RANGE	DEFINITION
Non-irritating	0 - 0.5	To maintain this rating all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Practically Non-irritating	Greater than 0.5 - 2.5	To maintain this rating, all scores at the 24 hour reading must be zero; otherwise, increase rating 1 level.
Minimally Irritating	Greater than 2.5 - 15.0	To maintain this rating, all scores at the 72 hour reading must be zero; otherwise, increase rating 1 level.
Mildly Irritating	Greater than 15.0 - 25.0	To maintain this rating, all scores at the 7 day reading must be zero, otherwise, increase rating 1 level.
Moderately Irritating	Greater than 25.0 - 50.0	To maintain this rating, scores at 7 days must be less than or equal to 10 for 60% or more of the animals. Also, mean 7 day score must be less than or equal to 20. If 7 day mean score is less than or equal to 20 but less than 60% of the animals show scores less than 10, then no animal among those showing scores greater than 10 can exceed a score of 30 if rating is to be maintained; otherwise, increase rating 1 level.
Severely Irritating	Greater than 50.0 - 80.0	To maintain this rating, scores at 7 days must be less than or equal to 30 for 60% or more of the animals. Also, mean 7 day scores must be less than or equal to 40. If 7 day mean score is less than or equal to 40 but less than 60% of the animals show scores less than or equal to 30, then no animal among those showing scores greater than 30 can exceed a score of 60 if rating is to be maintained; otherwise, increase rating 1 level.
Extremely Irritating	Greater than 80.0 -110.0	

*Kay, J.H., Calandra, J.C., J. Soc. Cos. Chem., 13:281 - 289, 1962.

SCALE OF SCORES FOR ULTRAVIOLET FLUORESCEIN SCAN

Reading	Grade
Negative	0
Positive with an area one quarter or less	1
Positive with an area greater than one quarter but less than one half	2
Positive with an area greater than one half but less than three quarters	3
Positive with an area greater than three quarters, up to whole area	4

DISPERSE RED 60

C.I. 60756

CAS 17418-58-5

M B Research Laboratories, Inc.

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PRIMARY DERMAL IRRITATION IN RABBITS

For: Toms River Chemical Corporation

Material received: 12/21/77
Test started: 1/10/78
Test ended: 1/13/78

Sample: Disperse Pink N Granules
Mix # 69
Concentration : 100%
TR # 77-1012 Code No: 4080-40

Description: Red powder
Project No. MB 77-2432

This study is designed to determine the primary irritation index of a compound in rabbits.

Six New Zealand White albino rabbits weighing approximately 2.5 kg were housed individually in suspended wire mesh cages in a temperature controlled room. Purina Rabbit Chow and water were freely available. After at least seven days equilibration the back and sides of each rabbit were clipped free of fur with an electric clipper. Rabbits with dermal lesions or irritation were replaced. One day after clipping the left side of the spinal column was abraded (minor incisions which did not disturb the derma or produce bleeding). 0.5 g, if solid, or 0.5 ml, if liquid, of the test material was placed on an abraded site and an intact site of each back. The material was covered with dry surgical gauze, one inch square, two layers thick. The patches were secured with adhesive tape; the trunk was wrapped with impervious material. After 24 hours the patches were removed. The dermal reactions were scored by the Draize technique at 24 and 72 hours. The primary dermal index was calculated.

The individual results are attached. The primary dermal index was 0.

CONCLUSION: Non-Irritant

Respectfully submitted,

Oscar M. Moreno

Oscar M. Moreno, Ph.D.
President
3/20/78

MB

INDIVIDUAL SCORES

	Rabbit Number						Mean
Erythema & Eschar Formation	1	2	3	4	5	6	Score
Intact skin - 24 hours	0	0	0	0	0	0	0
Intact skin - 72 hours	0	0	0	0	0	0	0
Abraded skin - 24 hours	0	0	0	0	0	0	0
Abraded skin - 72 hours	0	0	0	0	0	0	0
Edema							
Intact skin - 24 hours	0	0	0	0	0	0	0
Intact skin - 72 hours	0	0	0	0	0	0	0
Abraded skin - 24 hours	0	0	0	0	0	0	0
Abraded skin - 72 hours	0	0	0	0	0	0	0

Sum of Mean Scores = 0

Primary Dermal Index = Sum of Mean Scores/4 0

Evaluation of Skin Reactions

	Value
Erythema & Eschar Formation:	
No erythema	0
Very slight erythema (barely perceptible)	1
Well defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4
Edema Formation:	
No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well defined by definite raising)	2
Moderate edema (raised approximately 1 millimeter)	3
Severe edema (raised more than 1 millimeter and extending beyond the area of exposure)	4